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RHAPSODY 4.0 DUE THIS YEAR

BY EDWARD J. CORREIA

Keeping its plans under wraps for nearly a year, embedded tools developer I-Logix Inc. has revealed features to be included in Rhapsody 4.0, the next version of its flagship embedded development environment based on the unified modeling language. The new version, which is scheduled for release by year's end, will include a completely redesigned user interface, document hyperlinking, and the ability to synchronize source code and UML diagrams dynamically.

But developers anxious for some of Rhapsody 4.0's new functionality will not have to wait. According to Jim McElroy, director of Rhapsody product marketing at I-Logix, the company has included several significant new features originally planned for version 4.0 in an interim release, dubbed Rhapsody 3.0.1, that will be sent automatically to all Rhapsody users who have current maintenance contracts, free of charge.

Among the features will be visual differencing, which McElroy described as a way to let developers compare one another's changes graphically rather than using the current text-based approach. "As multiple developers work on pieces of the same design, they can visually merge their design changes together," he said. Merges are possible with any program object, he added, including components, UML packages and individual or groups of classes.

Also introduced with 3.0.1 is Test Conductor, a UML-compli

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Dial 9i AS To Call All Applications

Oracle to build voice-enabling technology into key products

BY DAVID RUBINSTEIN

With an end-of-year release projected for version 2.0 of its 9i Application Server Wireless Edition, Oracle Corp. is giving developers what it calls the first platform to create and deploy applications once for use on any device—Web, wireless or voice-activated. The release will mark the beginning of Oracle's plan to put voice-enabling technology into key segments of its product line, including its JDeveloper integrated development environment for Java.

WAP and voice have little in common, says Oracle's Christfort.

"The problem of writing one application to reach many different devices is as important as ever," said Jacob Christfort, Oracle's CTO and vice president of product development for OracleMobile (http://technet.oracle.com/hosted_dev/oracle_mobile/content.html). "We didn't want a least-common-denominator approach. There is no least common denominator between WAP and voice."

Christfort said Oracle's solution centers on an XML schema within 9i AS Wireless Edition that defines application flows for the creation of XML-based applications. Oracle 9i JDeveloper will provide developers with tag libraries for the XML schema to simplify the creation of these XML-based applications, Christfort said. The

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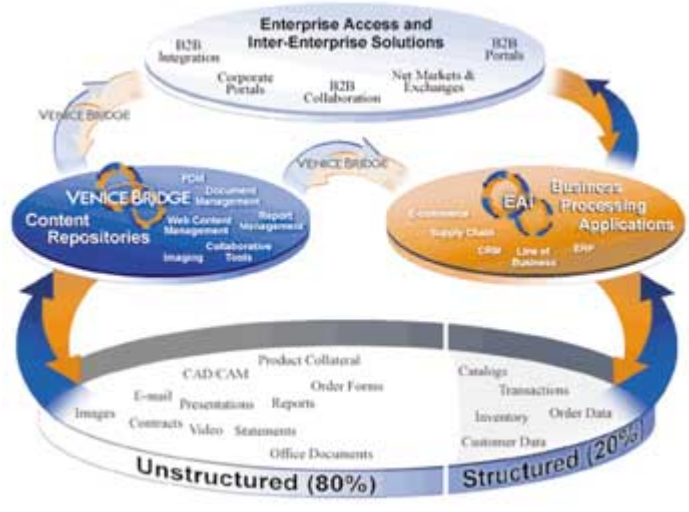
Building Bridges to Unstructured Data

Venetica offers Java, SOAP, COM interface to enterprise content

BY DAVID RUBINSTEIN

There is structured data, such as that stored in databases and business-process applications, and there is unstructured data, which can reside in documents, reports, images, notes…basically anywhere. That's the problem: If it can be anywhere, how can it be integrated into an enterprise data scheme?

Tackling the problem of accessing, aggregating and delivering this data and content across a large organization or within a partner network is Venetica Corp. (www.venetica.com), which this month will release version 4.0 of its VeniceBridge content integration tool set.



Venetica claims to access and aggregate all of an organization's data.

"There are so many players in this market, but we're the piece that ties it all together," said Jeff Dodson, product manager for VeniceBridge. "We integrate all the different silos organizations have created for their content."

VeniceBridge, which was first introduced in September 2000, provides organizations with an infrastructure layer

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LINEO ADD-ON VALIDATES GPL LICENSES

BY EDWARD J. CORREIA

Embedded Linux developer Lineo Inc. has released the GPL Compliance Toolkit, an add-on to its Embedix SDK that it claims can analyze a Linux application and determine which software license or licenses it falls under and show areas of possible exposure to the licenses' requirements.

According to Dan Montierth, general manager of Lineo's tools group, the toolkit is designed for companies on the fence about using an open-source operating system. "There are corporations that want to leverage the strength of the Linux open-source libraries," he said, "yet they're afraid because they've heard

▸ continued on page 22

My fears, in no particular order. The project tanks.
My team turns on each other and implodes.
Upper management looks for someone to blame.

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SOFTWARE

NetBeans Expands Beyond Java

Sun's open-source development environment now works with C/C++, FORTRAN

BY ALAN ZEICHICK

Celebrating the first anniversary of its NetBeans open-source integrated development environment and tools platform, Sun Microsystems Inc. has released new integrations designed to expand NetBeans' reach to languages other than Java, and to allow developers to use popular Linux/Unix code editors within the IDE.

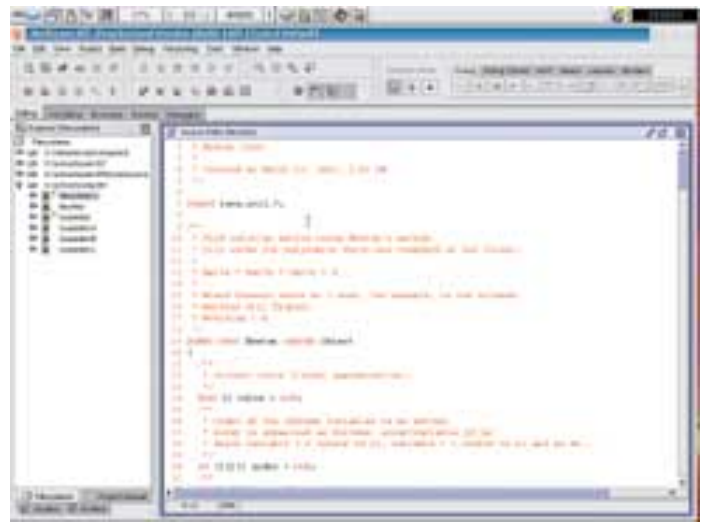
The NetBeans IDE includes a runtime application framework, a tools framework that links external applications, and a common graphical user interface. Sun will be using NetBeans as the basis of its commercial Forte development tools product line, according to Tim Boudreau, senior manager for NetBeans and open source at Sun. "Forte for Java is a distribution of NetBeans, the same way that Netscape Navigator is a distribution of Mozilla," he said, adding that Compuware Corp.'s OptimalJ development suite is also based on the NetBeans IDE code.

Although the IDE's code itself is written in Java, Boudreau said that "when we set out to design NetBeans, our goal was to have a plug-in architecture. Even support for Java [development] is a plug-in." The IDE works on a number of operating systems, including Linux and Windows, but "it works a little better on Solaris than on Linux," he added.

The newest modules for the project, according to Boudreau, are integration modules that support C/C++ and FORTRAN. "You can use these integrations with any compilers you choose," such as gcc, he said, noting that these modules provide source browsing, syntax coloring and other language-specific visual features within the IDE. As of press time, the two modules were being integrated into NetBeans' version-control system, and should be available by mid-September from www.netbeans.org, he said.

The open-source project also has worked to support two popular Unix editors, emacs and vi, within the NetBeans environment.

For emacs (www.gnu.org/software/emacs), the NetBeans project has developed a custom configuration file for the editor, which explains to the editor how to work within the IDE, said Boudreau; this code also should be available from the NetBeans site by mid-September, and perhaps from the GNU emacs site as well.



The Java-based NetBeans IDE runs on multiple operating systems, ranging from Linux, Solaris and Windows, to HP-UX, Macintosh, OpenVMS and OS/2.

With vi, the team created a custom version of the editor itself, which is compatible with the NetBeans IDE; NetBeans is still working out the licensing issues, and thus isn't ready to release it. "I'm not a lawyer," said Boudreau, adding that NetBeans users and developers should watch the Web site to see when the vi code will be available. ■

Infragistics Claims First .NET Component Suite

Vows availability within four weeks of Microsoft's release

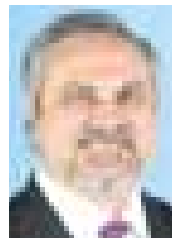
BY CHRISTINA M. PURPI

Infragistics Inc. is claiming it will be the first vendor to offer a full-featured set of software components for Microsoft's Visual Studio.NET development environment when it is released, which according to Microsoft will be by year's end. In fact, the company says that it's keeping its promise to ship its suite of components within four weeks of the release of VisualStudio.NET.

Infragistics' (www.infragistics.com) plan is to launch two component suites: one for developing rich client applications and one for developing server-side components in ASP.NET. Each suite is priced starting at $595, with various licensing and subscription update programs available.

The UltraWinSuite 1.0, for client applications, will include components for calendar scheduling, tree views of data, and adding the Windows XP look and feel to applications. Version 2.0, which is scheduled to be released three to six months after 1.0, will add new components for generating charts and working with Windows Explorer.

"Other companies and competitors have released scattered components, with an unclear path to .NET," said Robert Wolf, vice president for sales and marketing. "With our two suites, we feel we have a view of what customers need, a clear focus and a complete solution."

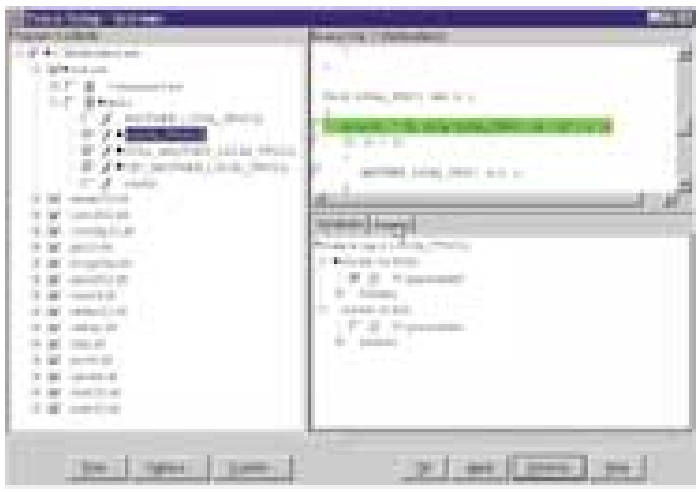


The learning curve for Infragistics' suites is small, says Wolf.

An advantage of having all components in a single suite is that "the learning curve is small," said Wolf. "Once you learn to program one component, you know them all."

UltraWebSuite 1.0, for server-side components, includes functions for tree and menu navigation and creating tool bars. Also slated for release three to six months after the original is version 2.0, which will add functions for chartings and displaying content in grids and tables. ■

OC SYSTEMS FINDS ROOT CAUSE OF APP FAILURES



Developers determine which runtime events to trace with RootCause.

BY ALAN ZEICHICK

There's nothing as frustrating as getting a bug report—especially on a bug that crashes an application—without being able to reproduce it. Core dumps, error messages and other diagnostic aids don't go far enough, according to OC Systems Inc.

The company claims that its RootCause diagnostic system, newly ported to Windows from Solaris, acts like a flight recorder for C++ and Java applications running in the field, sending crash data back to developers, and can help companies find the cause of application failures more quickly.

"Because it works at runtime, [RootCause] provides the ability to trace the entire application, even dynamically generated code," said Oliver Cole, president of OC Systems (www.ocsystems.com), in a statement. The information captured by RootCause also includes information outside the app, including hardware, network, database, middleware and operating-system code, according to the company, and generally impacts performance by between 1 percent and 5 percent, depending on which runtime events and data the tool is instructed to trace. The crash reports are automatically sent back to the developers via e-mail or FTP.

The company has released a beta of RootCause for Windows NT/2000/XP clients, and the software will be generally available in October, at a price of $1,795 for one developer and one server; according to company spokeswoman Judy Schramm, a typical installation, including runtime fees, would be at least $35,000 per application. ■

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Microsoft Releases XQuery Demo

Preliminary language syntax, classes integrate with .NET Framework

BY ALAN ZEICHICK

Taking advantage of the latest working draft of the W3C's XQuery language, Microsoft Corp. is offering a downloadable implementation of the language as a set of classes to be used with the .NET Framework.

The XQuery language (www.w3.org/TR/xquery), which has been the subject of a W3C working group since 1999, is designed as a general access model for carrying out database-style queries against individual or groups of XML documents. The W3C sees XQuery as a fundamental part of its family of XML specifications, and intends to include it in the forthcoming Xpath 2.0 data model specification.

Currently, there are more than 40 members of the XQuery working group, including IBM Corp., Microsoft and Oracle Corp.

Microsoft's first demonstration implementation of XQuery appeared last April. The newer version is intended to implement the W3C's June 7 version of the language syntax, according to Mark Fussell, program manager for XML technology at Microsoft.

Based partly on SQL and partly on older XML query tools, the language offers SQL-like benefits to developers, allowing them to query and manipulate XML data without paying attention to the format of the documents.

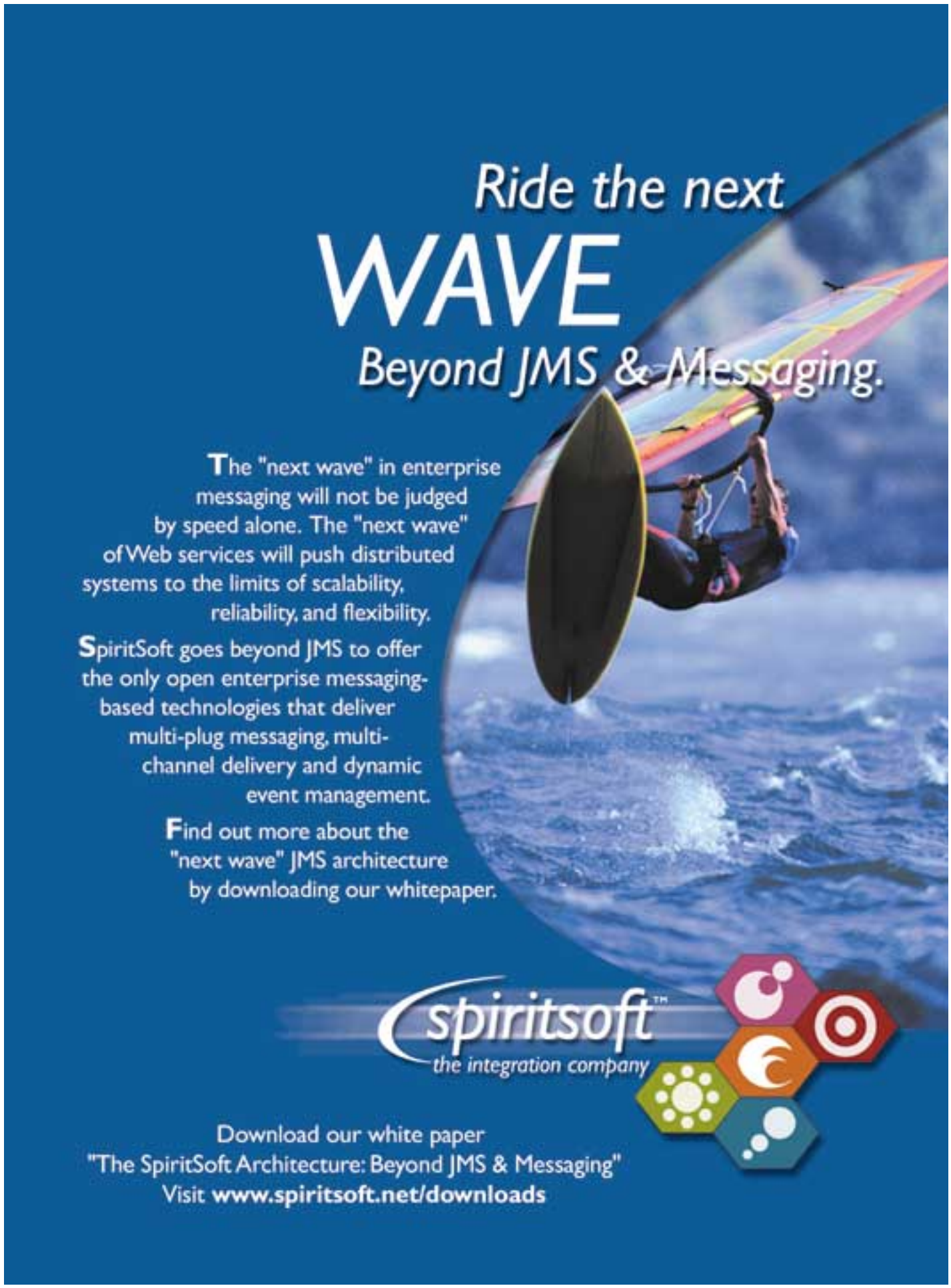
"XQuery goes beyond XSLT because it's a more powerful query language that goes against multiple data sources. XQuery is to XML like SQL is to relational databases," Fussell said. "For example, if I go to a Web vendor and ask it for inventory data, to compare against my shopping list, I might get one document back or I might get several," he said, noting that XQuery's general model will allow the reply to be processed, no matter how many documents are returned. XSLT, he said, would work only with a single returned document.

Philip DesAutels, Microsoft's product manager for XML Web services, said that XQuery, once completed and released as a W3C Recommendation, will be incorporated into the .NET Framework, adding, "We see [XQuery] as fundamental to the whole XML picture."

DesAutels declined to speculate as to when the specification would be finished, and added that although Microsoft has made the preliminary XQuery set of classes available—and he encourages developers to experiment with it—he would not recommend that it be used in a production environment.

Fussell added that there are "big issues" still to be resolved with the language specification, but declined to be specific. What he is looking for with this code demonstration is feedback, either on the query language's syntax, which he will bring back to the W3C, or on Microsoft's implementation of the draft.

Microsoft's XQuery demo is available for download from http://131.107.228.20. ▮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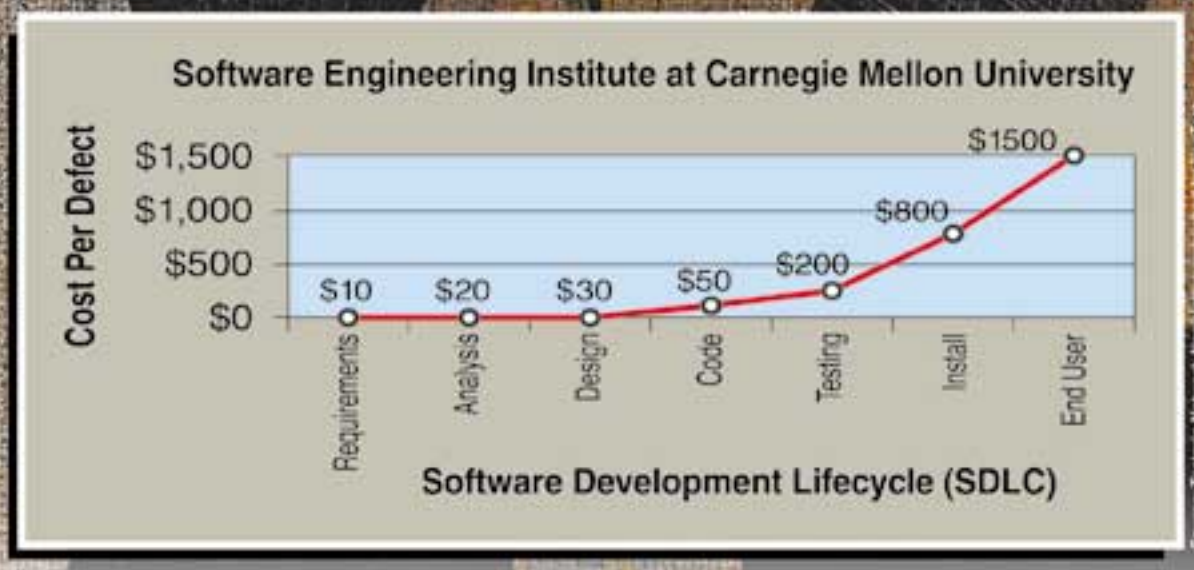

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Starbase Adds Java, XML to eXpressroom

Software update blurs line between code, content

BY CHRISTINA M. PURPI

Starbase Corp. has added integration management and deployment of Java, JSP and XSL to its XML-based eXpressroom content-management system. eXpressroom 2.5 now permits code developers to share software as content developers, so nontechnical authors can contribute work to the same repository as technical Java, JSP or XSL.

Starbase (www.starbase.com) acquired eXpressroom along with its purchase of Worldweb.net earlier this year. New to version 2.5 is that developers of active components such as stock tickers, e-commerce objects and online polls can now add their own Java code to the content-management system, where it can be integrated into the site-staging environment. Version 2.5 allows new Web application features to be previewed, reviewed and released as easily as Web content, according to the company.

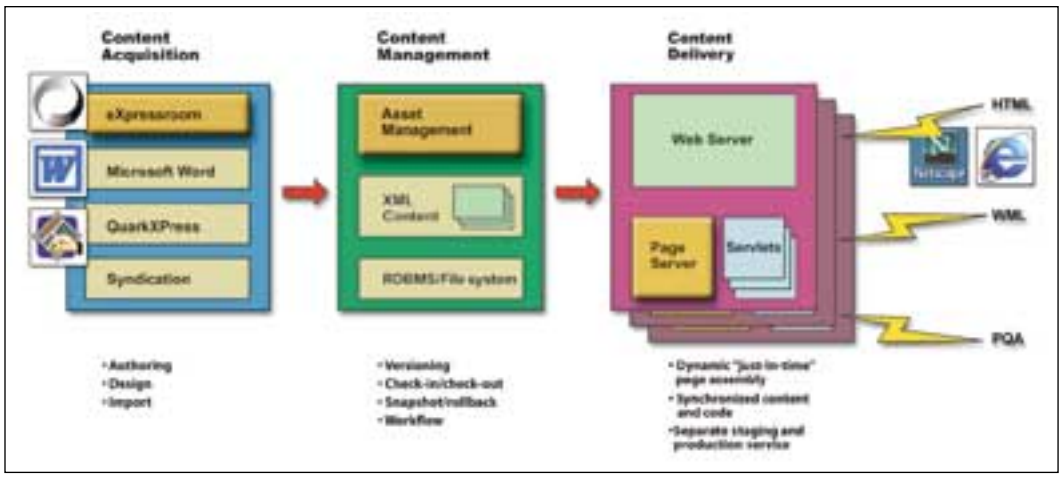
eXpressroom's object-oriented XML content model will now allow any element of content to be reused or transformed, the company says. "The plan," said Rob Heittman, senior product champion of the products group, "was to bring content management and application development together."

According to Sean McIntyre, senior director of product development, this is a way of bringing active and passive site components together. "We believe that blurring the distinction between code and content is the wave of the future. We call these code objects 'intelligent content,' and can now manage and deploy them in eXpressroom just like any other content," explained McIntyre, adding that the product should be considered a visual design tool that helps developers more easily reuse and repurpose content in XML.

"What differentiates us from the competition is that we use an innovative approach in our object model based on XML, which combines content with code," said Heittman. "The code and content are integrated in one environment; the code depends on the content."

The newest eXpressroom release also integrates with BEA Systems Inc.'s WebLogic Personalization Server and Sybase Inc.'s Enterprise Application Server.

Pricing for eXpressroom 2.5 starts at $50,000, which includes licenses for two servers and up to five clients. According to McIntyre, an average implementation costs about $90,000. ▮



The new version of eXpressroom now permits users at all levels to work together on any content.

ORACLE

◂ continued from page 1

app server can translate XML input from applications into the appropriate markup language for specific wireless targets, creating what Christfort said is a "tremendous enhancement" over building multiple versions of the same application.

Christfort indicated that the main factor holding back voice enablement was that the accuracy of recognition was low; now, he said, it is at 95 percent.

Also, developers writing voice-enabled applications had to commit early on to one gateway, and according to Christfort, even a small, entry-level gateway used merely to get a product off the ground could cost in excess of $100,000, then prove to be not best-suited for the types of applications being developed. Now, Oracle offers a hosted development environment on its Mobile Online Studio Web site that provides developers a free gateway for applications. The 9i AS Wireless Edition 2.0, he added, will include drivers to such voice gateways as those from VoiceGenie, General Magic and Verascape, freeing developers to choose the one most suitable for them. 9i AS Wireless also will support speech recognition and text-to-speech tools from Nuance Communications and SpeechWorks International Inc.

Speaking of the need to voice-enable applications, he remarked that "there must be a billion wireless handsets." For enterprise developers planning to voice-enable applications, Christfort noted that parts of the business process you require from a handset are different from those you would need working at a desktop—just as the role of a company clerk is different from that of a salesman. "These are not the same applications," he said. ▮

News Briefs

COMPANIES

Sitraka Inc. has integrated its JProbe performance tuning tools with Oracle Corp.'s 9i Application Server. According to Sitraka, the Oracle server is based on J2EE standards, so the integration was easy and required no Java code change . . . **XML Global Technologies Inc.** is now offering a Web services version of its GoXML Transform server. GoXML Transform acts as an intermediary between e-business trading partners, handling the translation of XML data among different formats through mapping and templates.

PRODUCTS

Cleanscape Software International claims that its new code-generation engine can create code for any language or platform from object models and code patterns. Called **SourceMill**, the tool automatically creates application frameworks for different platforms from templates, and reduces errors through the elimination of redundant hand-coding. Including the code engine, templates, object models and utilities for creating or customizing object models and templates, SourceMill sells for $1,290 for a single-user license. There is a 50 percent discount prior to Oct. 31 . . . Visual Numerics Inc. has made available **PB-Wave 7.5**, a family of products for visualizing data and performing numerical analysis. According to the company, the two major enhancements are OpenGL support via the open-source Visualization ToolKit, and the addition of 77 new C Numerical Library functions, including 50 designed specifically for the financial and insurance markets . . . **Real-time Studio 4.1**, a software modeling and development tool from Artisan Software Tools Inc., now is shipping with new integrations with the RTM Workshop information management system from Integrated Chipware Inc. and model management support for Telelogic Inc.'s CM Synergy configuration management tool, as well as an Ada code generator and new capability to import large Rational Rose models . . . Borland Software Corp. has made available a free version of **Delphi 6**. Called **Personal Edition**, it is licensed to let programmers develop applications for personal and noncommercial use on the Windows platform . . . Microsoft Corp. has released the second beta of **Talisker**, its code name for the next release of **Windows CE**. According to the company, the 3.0 version includes enhanced 802.1*x* support, offers real-time developer collaboration capabilities and now supports DirectX8. Also new is the ability to create Windows CE images and test them on a Windows 2000/XP workstation . . . Embarcadero Technologies Inc. has released the **Embarcadero/Sybase Debugger**, with Sybase Inc. providing the API and certification for use with its database . . . **Precise/Indepth for WebSphere**, newly launched by Precise Software Solutions Ltd., helps developers debug performance problems with Java applications running on IBM's application server, by correlating the performance metrics for Java servlets, JSP, EJBs and JDBC connections across the business logic and database links . . . Parasoft Corp. has begun porting its **CodeWizard** automatic coding standard enforcement tool and its **Insure++** automatic runtime error-detection tool to Hewlett-Packard Co.'s 64-bit Itanium-based systems . . . Turbolinux Inc.'s new mainframe operating system, **z/Linux 6.5**, for IBM's zSeries and S/390 servers, includes a tape-based installation program, which means that Linux developers need not learn the host's z/VM operating system in order to bring up Linux on the mainframe. Turbolinux claims that zLinux is more tightly integrated with z/VM's management tools than other distributions . . . Swedish firm Telelogic AB has updated its DOORS enterprise requirements suite, which the company purchased from Quality Systems a year ago. The new **DOORS/ERS 5.2**, which incorporates a database, Web interface and Microsoft Word document manager, has improved data sharing, historical reversal, and project access controls, and also enhances security. DOORS runs on HP-UX, Solaris and Windows . . . The popular **K Desktop Environment**, an open-source graphic interface for Linux, has been enhanced by the KDE e.V., the project's sponsor. Released in late August, KDE 2.2 includes more than 100 enhancements, including faster application launching, improved stability when rendering HTML and JavaScript, and addition of the IMAP protocol for the KMail e-mail client. There also are many changes to the KDE base libraries.

▸ continued on page 23

Great Bridge Combines Apache, PostgreSQL

New WebSuite provides unified graphical installer, technical support

BY ALAN ZEICHICK

Great Bridge LLC, one of the first commercial providers of the PostgreSQL open-source relational database, has introduced a suite of open-source software for Linux and Solaris designed to provide the basis for Web development.

The new WebSuite, which shipped for Red Hat Linux 7.*x* on Aug. 20, includes PostgreSQL 7.1, PHP 4.0.6, the Apache Web server 1.3.2 and the Tomcat servlet and Java Server Pages engine. According to Dave Mele, vice president of marketing, versions of WebSuite for TurboLinux, SuSE Linux and Solaris 7 and 8 will ship in early September.

The WebSuite package is priced at $2,495 per server and includes 30 days of tech support and a year of software updates; the company's business model is to sell customers consulting, developer support and tech support around the open-source software, according to Mele.

Great Bridge's (www.greatbridge.com) value-add, said Mele, is its new unified graphical installer, documentation, support and an integrated suite of PostgreSQL administration tools. "We've integrated the suite to save developers time," said Mele, allowing them to finish their projects more quickly. ■

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SOFTWARE AG: TAMINO 2.3 MUCH FASTER

BY ALAN ZEICHICK

Software AG Inc. has updated its Tamino XML database to improve its performance and scalability, according to the company, which claims faster response to complex queries and the ability to compress data to one-fifth its original size.

Tamino XML Server 2.3, which shipped in August, has all the changes under the covers, said John Taylor, director of product marketing (www.softwareagusa.com). "We totally restructured the internal storage and indexing mechanism, and added optimizing logic as well," he said. "These changes resulted in an average query improvement of eight times, and document load times of four times." With complex queries, the company claims a tenfold improvement.

"At the same time," said Taylor, "we added proprietary compression algorithms and logic that by default automatically compress documents over 64K [in size]. Through this functionality, we were able to reduce data footprint size to 80 percent of the original document size, and that includes the data and all standard indexes."

Tamino XML Server 2.3 is immediately available for OS/390, Solaris and Windows servers, and the company claims that AIX, HP-UX and Linux versions will be available shortly. ■

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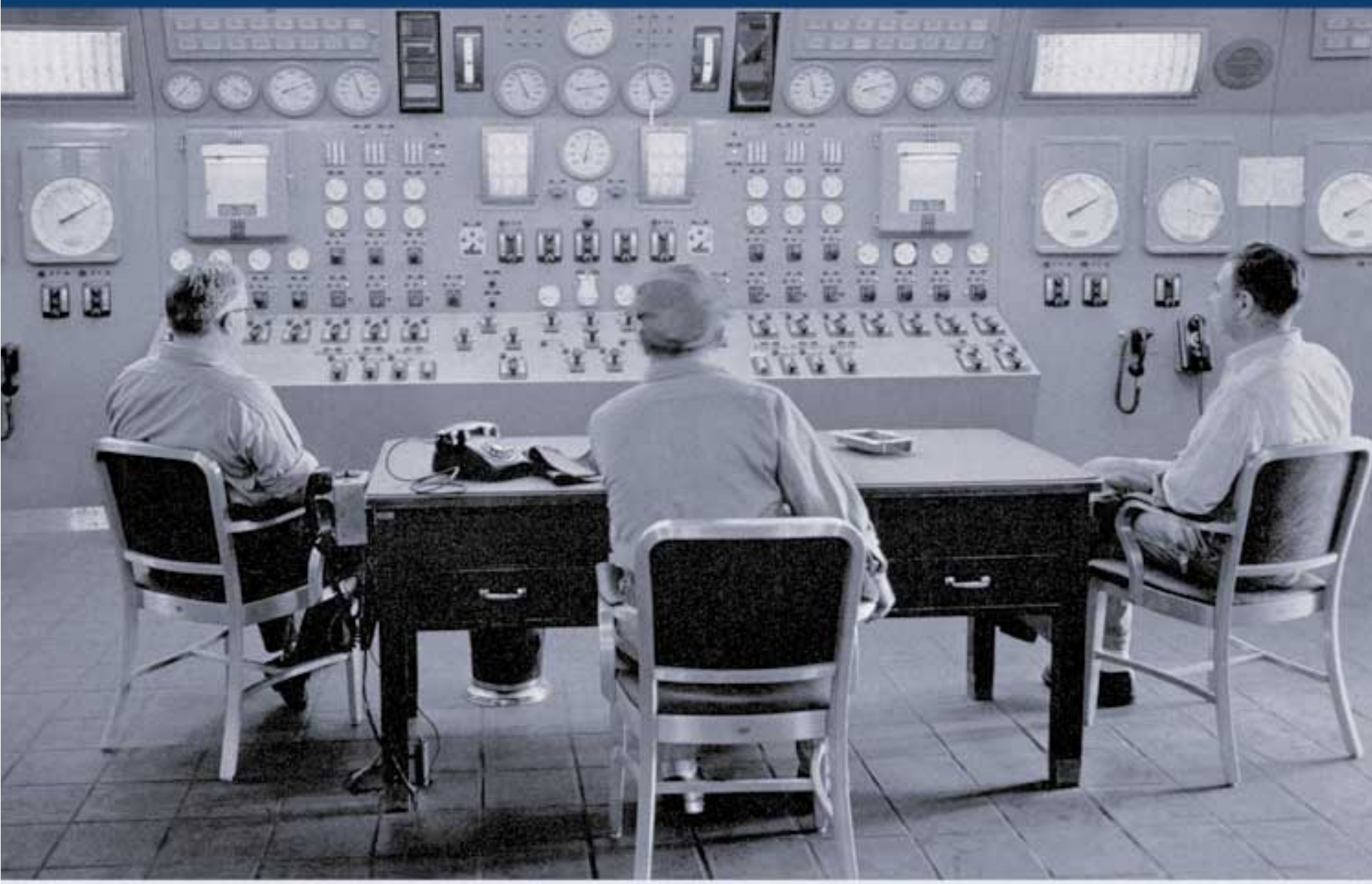

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SQL SERVER 2000 BENCHMARKS

Application/Workload	World Record Results
SAP R/3 3-Tier S&D Application	20,000 concurrent users
TPC-C	909,220 tpmC**
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PeopleSoft Payroll	12,000 concurrent users
J.D. Edwards OneWorld	8,000 concurrent users
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To get the full story on Microsoft SQL Server 2000 scalability, go to **microsoft.com/sql/worldrecord** Software for the Agile Business.

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* As of 6/12/2001. Unisys ES7000: 1.91 second Average Response Time (Dialog), 6,040,000 Dialog Steps/Hour, 2,013,330 line items per hour, SAP R/3 4.6C, 32x 900MHz Pentium III Xeon processors, 32GB memory, DEMO: Windows 2000, SQL Server 2000 SP1. Visit www.sap.com/benchmark to link to benchmarking data. Visit Sciaris & Oracle 8.1.6. † Best SQL Server price/performance is Dell PowerEdge 6400, 26,322 tpmC, 6.40 $/tpmC, available 2/2/01, compared to best competitor (Sybase) is HP 9000 Model L3000, 22,423 tpmC, 16.43 $/tpmC, available 4/1/01. **IBM eserver xSeries 370, 688,220 tpmC, 22.58 $/tpmC, available 5/31/01. TPC

VENETICA

◂ continued from page 1

between their applications and their data and content through a single API, Dodson said, adding that its differentiator from content-management tools is the ability to access multiple sources of content and exchange it between repositories and with business partners and customers.

Dodson defined content integration as access, aggregation, exchange and delivery of content to e-business applications from any content-management solution, of which large organizations have many, to any Web server.

The single API allows for federated searches across disparate repositories, he explained; the VeniceBridge API provides a Java, COM or SOAP interface, while the core server components are Enterprise JavaBeans, "to take advantage of component distribution, failover and load balancing native to any EJB 1.1-compliant app server," he said. The API exposes the underlying functionality of the repository, and provides for session management and data mapping by normalizing the multiple index schemas found across the repositories. VeniceBridge translates the vendor-specific APIs associated with the multiple repositories and packages up content and metadata as XML for distribution over the Web or network.

New to this release are the SOAP-based interface for Web services for content exchange in an ASP environment, and VeniceBridge Content Providers, prebuilt integrations into BEA's Personalization Server, Siebel ERM, Epicentric, Viador and Oracle Clinical e-business applications, he said.

VeniceBridge licensing is based on the number of servers and repositories and starts at $65,000; typical configurations range from $100,000 to $125,000, Dodson said. ▮

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Merant Offers In-House Hosted SCM

BY ALAN ZEICHICK

Not content to offer both server-based and hosted versions of its source configuration management suite, Merant Inc. is combining both worlds. The company's new ASAP Onsite program is designed to have Merant's own staff install a Dimension 7.0 SCM server within the enterprise, behind the firewall—but then have Merant manage and administer the server on an ongoing basis.

Development processes, workflow and requirements are constantly changing, said Merant (www.merant.com) spokesman Steven Gottlieb. "ASAP provides customers with highly trained SCM administrators who ensure that these process improvements are properly captured and reflected in their applications on an ongoing basis," he added. "In effect, the customer is paying a retainer fee for SCM expertise."

Gottlieb said that the ASAP Onsite program includes a collaborative workspace in addition to the SCM software. "The ASAP workspace is not available with a regular license of Dimension," he said. "With the workspace, you get access to all of Merant's collaboration tools—instant messaging, chat room [and] bulletin board."

Pricing is variable, he said, and is subscription-based per number of users, including rental of software and administrative and support services. In addition, Merant charges a service setup fee that is also based on number of users, he said. ▮

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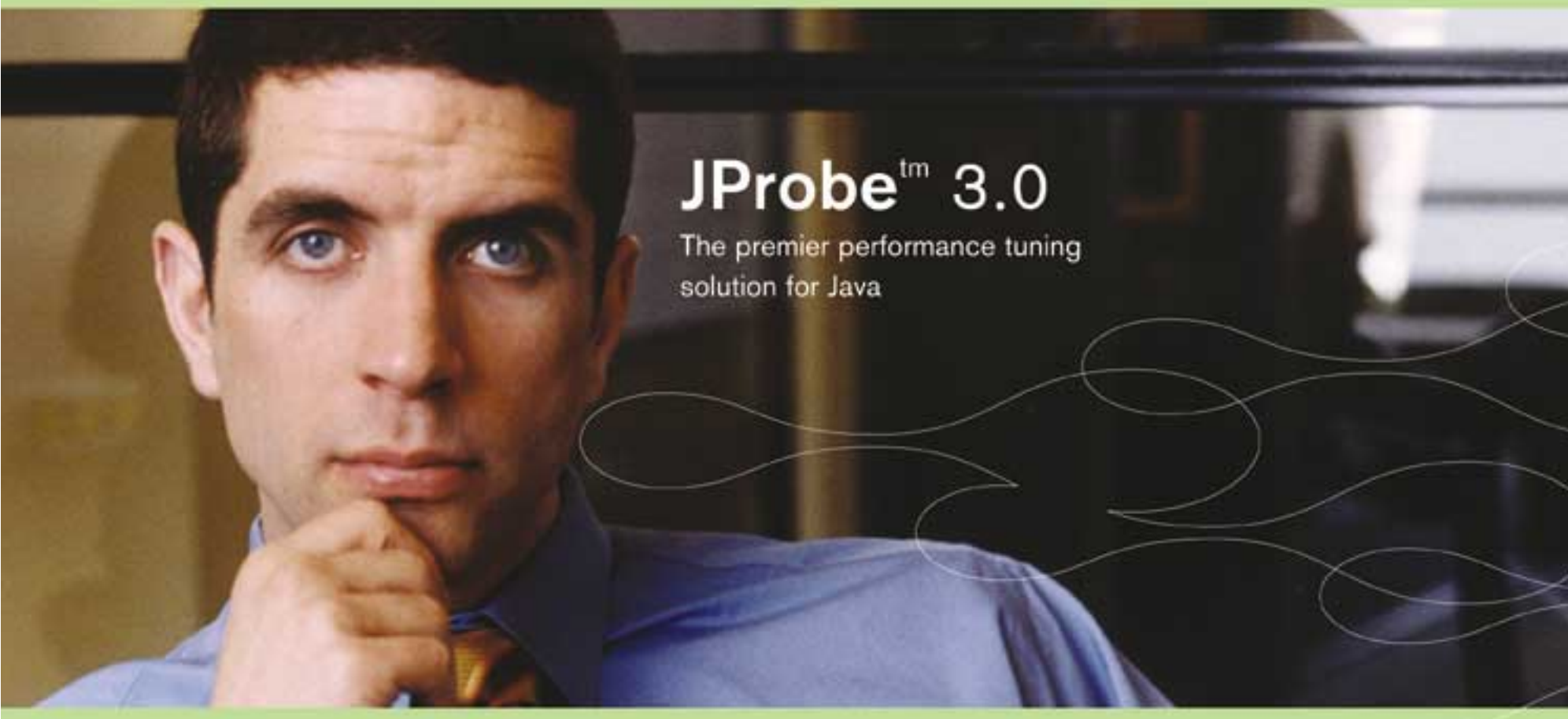

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Mac OS X

An Overview for Developers

With Mac OS X, Apple asserts its leadership in the advanced technologies and design sensibilities that are the hallmarks of any great operating system.

Mac OS X is a completely rebuilt implementation of the Macintosh operating system. It expands on Apple's technological strengths, such as industry-standard networking capabilities and industry-leading user interface design.

More importantly, Mac OS X combines those strengths with support for a variety of technologies beyond those typically associated with the Macintosh, such as UNIX and Java 2 Standard Edition. This unique combination of technologies offers developers stability, power, and interoperability, beneath a well-designed, elegant, and intuitive user interface. As a result, Mac OS X presents new opportunities for both development and deployment.

Darwin

The stability of Mac OS X begins with Darwin, the open source core of the system. Darwin integrates a number of technologies, including the Mach 3.0 kernel, operating system services based on BSD UNIX, high-performance networking facilities, and support for multiple integrated file systems. Further, Darwin's modular design lets developers dynamically load such things as device drivers, networking extensions, and new file systems.

Apple and Open Source

Apple is the first major computer company to make open source development a key part of its ongoing software strategy. The core of Mac OS X, Darwin, is itself an open source project. This approach to operating system development allows developers and students to view the Darwin source code, learn from it, and submit suggestions and modifications. Developers can participate in the Darwin open source project by signing up at: **http://www.opensource.apple.com**

Darwin's advanced memory protection and management system ensures reliability by allocating a unique address space for each application or process. The Mach kernel augments virtual memory semantics with the abstraction of memory objects. This enables Mac OS X to manage separate application environments simultaneously, while presenting users with a seamless experience.

Darwin also supplies the following advanced functionality:

- Preemptive and cooperative multitasking.
- Symmetric multiprocessing (SMP) augmented by support for multithreading.
- Real-time support guaranteeing low-latency access to processor resources for time-sensitive media applications.
- An object-oriented device driver programming framework called I/O Kit.

Graphics System

Mac OS X combines three powerful graphics technologies, Quartz, OpenGL and QuickTime, enabling developers to push graphics beyond anything users have seen on a desktop operating system.

Mac OS X system architecture

Quartz

Quartz is the foundation of the Mac OS X imaging model. It is comprised of a high-performance, lightweight window server and a graphics rendering library for two-dimensional (2D) shapes. The window server features such advanced capabilities as device-independent color and pixel depth, layered compositing, and buffered windows for the automatic repair of window damage.

The Quartz rendering model is based on the cross-platform Portable Document Format (PDF) standard, enabling developers to easily embed and manipulate PDF data within any Mac OS X application. This yields such benefits as automatic PDF generation and save-as-PDF, automatic onscreen preview of graphics, conversion of PDF data to printer raster data or PostScript, and a consistent feature set for all printers.

The layered compositing engine used by Quartz allows developers to create unique onscreen effects. It replaces the "switch model" of traditional windowing systems with a "video mixer" model in which every pixel on the screen can be shared among windows in real time. This model allows for smooth transitions between the states of the graphical user interface.

Quartz also provides developers with these advantages:

- On the fly anti-aliasing of graphics and text enabled by the use of a floating-point coordinate system and high-precision vector processing.
- Direct access to the video frame buffer.
- Automatic detection of and benefit from the floating-point coprocessing performed by the Velocity Engine in PowerPC G4 microprocessors.

OpenGL

For three-dimensional (3D) graphics, Mac OS X features an optimized implementation of industry-standard OpenGL. OpenGL is one of the most widely adopted graphics standards today, making code written to OpenGL extremely portable and making generated visual effects highly consistent. It is specifically designed for games, animation, CAD/CAM, medical imaging, and other applications that need a rich, robust framework for visualizing shapes in two and three dimensions.

QuickTime

Mac OS X comes packaged with the latest version of QuickTime, a powerful multimedia technology for manipulating, enhancing, and storing video, sound, animation, graphics, text, music, and even 360-degree virtual reality. It also allows streaming of either live or stored digital video. As a cross-platform technology, QuickTime can deliver content on Macintosh and Windows systems. Augmenting its cross-platform capabilities, QuickTime supports every major file format for images and every significant professional file format for video.

Through the QuickTime plug-in, QuickTime's digital video streaming capability is extended to all popular web

browsers. The plug-in supports over thirty different media types and makes it possible to view over 80 percent of all Internet media. QuickTime also features other advanced web streaming capabilities, such as movie "hot spots" and automatic web page launching.

User Interface

The most visible expression of Mac OS X power and technology is its new user interface, Aqua. Apple applies its leadership in user interface design to Aqua, incorporating many of the qualities and characteristics Macintosh users expect, while adding advancements to benefit expert and novice users alike. Ease of use is factored into every feature and capability.

Consistent with Apple's design philosophy, visual enhancements serve not just as beautiful images, but as cues to the functionality and operation of the system.

A prime example of this user-focused design is the use of "sheets." These non-modal dialog boxes attach directly to the title bar of the relevant document, intuitively linking document and action. The non-modal nature of sheets prevents applications from hijacking the system and interrupting user workflow.

Interoperability

Mac OS X makes unprecedented use of technologies and standards that allow interaction with other platforms. This affords both developers and users the opportunity to use Macintosh computers in new places and in new ways. Mac OS X manages multiple file and networking formats and supports a wide range of industry-standard protocols. Based on an enhanced VFS design, the file system supports multiple local formats and complies with POSIX file system semantics.

Hardware connectivity is simplified through built-in support for Ethernet (10/100/1000Base-T); serial connections for modems, ISDN, DSL; wireless networking through AirPort (IEEE 802.11); USB (Universal Serial Bus); and FireWire (IEEE 1394).

Java 2 Standard Edition

Mac OS X ships with a complete implementation of Java 2 Standard Edition (J2SE) version 1.3, including the HotSpot client virtual machine. Benefits of Apple's Java implementation include access to Aqua user interface elements "for free" through Swing, native preemptive multitasking, automatic multiprocessing support and management of JAR files as shared libraries.

This last advance improves the speed of execution and reduces the RAM footprint of applications which rely on the same archive, such as applications within suites. Mac OS X also plugs the Java windowing toolkit more directly into the Mac's native windowing toolkit, giving Java applications and applets the graphics performance benefits of Quartz.

Backward Compatibility

To afford users a gentle migration path, Mac OS X builds on Darwin's ability to manage multiple application environments simultaneously. The Classic environment is actually a full version of Mac OS 9.1 running in a protected memory space under Mac OS X. As a result, most Mac OS 9 compatible applications will run side-by-side with Mac OS X applications.

Additionally, developers can code for Carbon, a native Mac OS X environment that allows programmers to take advantage of advanced Mac OS X features while retaining compatibility with the installed base of Macintosh computers running Mac OS 8.1 and later.

Development Options

There are multiple ways to develop for Mac OS X. Individual skills, preferred languages and tools, target user base, and time to market concerns will influence a developer's approach:

Carbon

The Carbon APIs are based on earlier Mac OS APIs. While Carbon allows applications to take advantage of Mac OS X features such as multiprocessing support and the Aqua user interface, Carbon is specifically designed to allow compatibility with older versions of the Mac OS.

Cocoa

The Cocoa application environment runs natively under Mac OS X. For those who wish to develop for Mac OS X using rapid application development (RAD) tools and object-oriented techniques, the Cocoa frameworks provide a fast and complete way to do so. These frameworks offer both Java and Objective-C APIs.

Java

The Java application environment allows development and execution of Java programs on Mac OS X, including 100% Pure Java applications and applets. The J2SE implementation in Mac OS X is designed to allow maximum Java application portability. Developers can also use the Java development language to write a Cocoa application, allowing Java programmers to use a familiar language to develop for a new platform.

UNIX

Since Mac OS X is built atop a UNIX kernel, porting UNIX-based applications to the platform is relatively easy. This enables enterprise-level UNIX products to enjoy parity with consumer and business applications on a commercial desktop platform.

Mac OS X offers opportunities for developers from many different backgrounds to port and build innovative and compelling applications.

And the best way to get started is with the Apple Developer Connection:

Apple Developer Connection membership programs offer benefits such as prerelease software seeding, code-level technical support, news and technology updates, and discounts on business support services. Developer documentation and resources are available free at **http://www.apple.com/developer**.

To learn more about developing for Mac OS X, visit the Mac OS X development website at **http://developer.apple.com/macosx**.

To request a free **Programming for Mac OS X CD-ROM** containing tutorials, sample code, and technical documentation designed to provide step-by-step descriptions of the methods developers can use to create Mac OS X applications, visit **http://developer.apple.com/sdtimes.html**.

ADC
Apple Developer Connection

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BetaSphere Revamps Feedback Management Server

BY ALAN ZEICHICK

BetaSphere Inc., a software company specializing in tools to allow software developers to gather requirements from customers and manage beta testing, is preparing an upgrade of its flagship product, Feedback Management Server (FMS). The server software is designed to gather information from customers or other product evaluators via a Web-based interface and e-mail, while taking action-based workflow rules and providing reports to the developers.

The FMS 3.0 release, scheduled for mid-September, focuses on improvements in five key areas, according to Phil Davis, vice president of strategic direction and marketing (www.betasphere.com). The biggest, he said, takes advantage of a recently signed OEM arrangement with Brio Technology Inc., giving BetaSphere access to Brio's Enterprise Decision Platform business-intelligence software and reporting software. "We have new reporting integration, with much richer analytics, using Brio, which allows for more cross tabs, slices and other reports," said Davis.

The FMS provides a Web-based interface for administering customer or tester feedback.

The new version also allows developers to more easily customize and extend the workflow features, with FMS, for example, escalating the process of getting feedback from customers if they don't respond to queries within a certain period of time. FMS has always had templates for common workflow processes, said Davis, but FMS 3.0 makes it easier to tailor them for specific project requirements.

Another change is to enhance the roles and security for individuals, defining which staff members or customers have "read," "write" or "no access" to specific fields, forms and reports. "There are more personas, and you can be more flexible in defining those personas," said Davis.

The other changes, according to Davis, were to expose more of the software's functionality via APIs, and to improve the user interface, "so that some operations which took three clicks now take only one," he said. FMS 3.0 is written in Java and object-oriented Perl, he said, and runs on Solaris servers. "We've tuned the database for Oracle, but by year's end it will support [Windows] NT and SQL Server," he added.

The entry-level price for FMS 3.0 will be $100,000, which includes the server software and access to the system by 10 team members and 10 evaluators. ▮

Extra Day for .NET

BY CHRISTINA M. PURPI

VSLive, a Visual Studio conference produced by Fawcette Technical Publications Inc., incorporates not only the long-standing VBITS Visual Basic conference, but also sessions on Visual C++, SQL Server and other Microsoft development languages.

Special to this October's VSLive event in Orlando, Fla., is a full day dedicated solely to Visual Studio.NET, focusing on ASP.NET, C# and XML developments.

The conference also emphasizes Windows XP and Web services, with sessions on HailStorm, ADO.NET and SOAP. ▮

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www.vslive.com

Oct. 9–14

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CONFERENCE HOURS:

Wednesday, 9 a.m.–9 p.m. (.NET Day)
Thursday, 9 a.m.–9 p.m.
Friday, 9 a.m.–6 p.m.

EXHIBIT HOURS:

Thursday, 11 a.m.–2 p.m.; 5 p.m.–7:30 p.m.
Friday, 11 a.m.–2 p.m.

KEYNOTES:

Wednesday

9 a.m., .NET Day Keynote, "Introducing .NET," Michael Risse, general manager, .NET Enterprise Servers, Microsoft

Thursday

9 a.m., "Visions of VB.NET-Upgrade, Interop & Migration," Rob Copeland, Visual Basic product unit manager, Microsoft

9 a.m., "What's New in VC++.NET," Nick Hodapp, product manager, Visual C++/Visual C#, Microsoft

9 a.m., "SQL Server 2000 2TheMax," speaker to be determined

Friday

9 a.m., "What I Know That May Surprise You," Alan Cooper, president, Cooper Interactive Design

9 a.m., "Getting Maximum Performance on Intel's Newest Processors," Jonathan Khazam, director of performance tools operation, Intel Solutions Enabling Group

9 a.m., "Creating Application-Aware Networks for Enterprise Scalability and Reliability," Bret Helsel, senior vice president of product development & CTO, F5 Networks

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CA Remains Uncertain Over Jasmine Brand

BY DAVID RUBINSTEIN

One of the publicly stated goals underlying Texas billionaire Sam Wyly's failed bid to reshape the board of directors of Computer Associates International Inc. was to split the company into four divisions: security, storage, systems management and knowledge management.

Although Wyly was overwhelmingly rebuffed in an Aug. 29 stockholder meeting, which favored the existing slate of directors led by board chairman Charles Wang, CA continues to wrangle with branding its divisions. Three of the strategic areas now have clear brands—eTrust for security, Unicenter for systems management and BrightStor for storage. The fourth area, which encompasses portal applications, knowledge management, predictive analysis and visualization, so far has been given the Jasmine brand name, but a highly placed source at CA said this is not yet final. "This area is just not as cut and dried as storage and security," said the source. Part of the problem is that what CA calls the knowledge-management area also includes software development tools, databases and utilities.

IBM Corp. made a similar move recently by giving much of its software development product line the WebSphere brand, in an attempt to unify those offerings under one umbrella.

CA already has renamed the COOL:2E application development environment for IBM iSeries servers Jasmine Developer 2E, and the source indicated that CA's Aion intelligent "rules inference engine" also will carry the Jasmine name.

The company has tentative plans to make an announcement later this year, perhaps late October or early November, the source said, regarding the branding of the knowledge-management area. "It's just confusing everyone the way it is now," the source said. ▮

VERSANT REVS ENJIN ACCELERATOR

BY DAVID RUBINSTEIN

To keep in step with the latest versions of J2EE-compliant application servers, Versant Corp. has released its enJin 2.2 transaction accelerator, which works with BEA's WebLogic 6.0 and IBM's WebSphere 4.0.

With the move, the company expands its reach beyond the world of EJB development into Java Server Pages and servlets, according to Kieron McCammon, Versant's (www.versant.com) senior director of technology and strategy. "enJin can be used without needing to know complexities of EJB or JDBC or mapping," he said. "You can use the transparent object management capability to store [data] within the application server environment." McCammon said that by "eliminating the overhead," enJin, which sits between the application server and the back-end data stores, helps give applications a tenfold improvement in performance.

After announcing an integration with TogetherSoft Inc.'s ControlCenter integrated development environment at JavaOne in June, McCammon said enJin now is integrated with the JBuilder IDE from Borland Corp., and that plans are in the works for an integration with IBM's WebSphere Workbench, which upon its release will replace the Visual Age for Java IDE. McCammon said wizards have been built into JBuilder to allow developers to create JSPs and servlets and deploy them onto enJin.

Other improvements to enJin 2.2 include a new JSP tag library for the creation of JSPs, and a suite of GUI tools that make management of data and code within enJin simpler, Benson said. ▮

NeoCore Upgrades Its XML Database

BY CHRISTINA M. PURPI

NeoCore Inc. has released an upgrade to its XML transactional database, XML Management System. According to the company, the new version, 2.0, provides enhanced flexibility, improved scalability and access control for development of business applications.

This new version, which runs on Solaris and Windows, extends the initial release's flexibility by using fine-grain queries that return elements, document fragments, full documents or combinations of multiple documents. These queries will also reduce the utilization of network bandwidth, says the company.

According to NeoCore (www.neocore.com), version 2.0 is schema independent, and supports all evolving schema standards. The new access control feature associates users with log-ins in order to allow apps to better control access to data.

Available now, pricing for version 2.0, entry level edition, starts at $10,000 per microprocessor and supports as many as five simultaneous requests and 1GB of data. Three other higher-capacity editions are available and are priced according to the number of simulated requests, the size of the database and the minimum number of microprocessors. ▮

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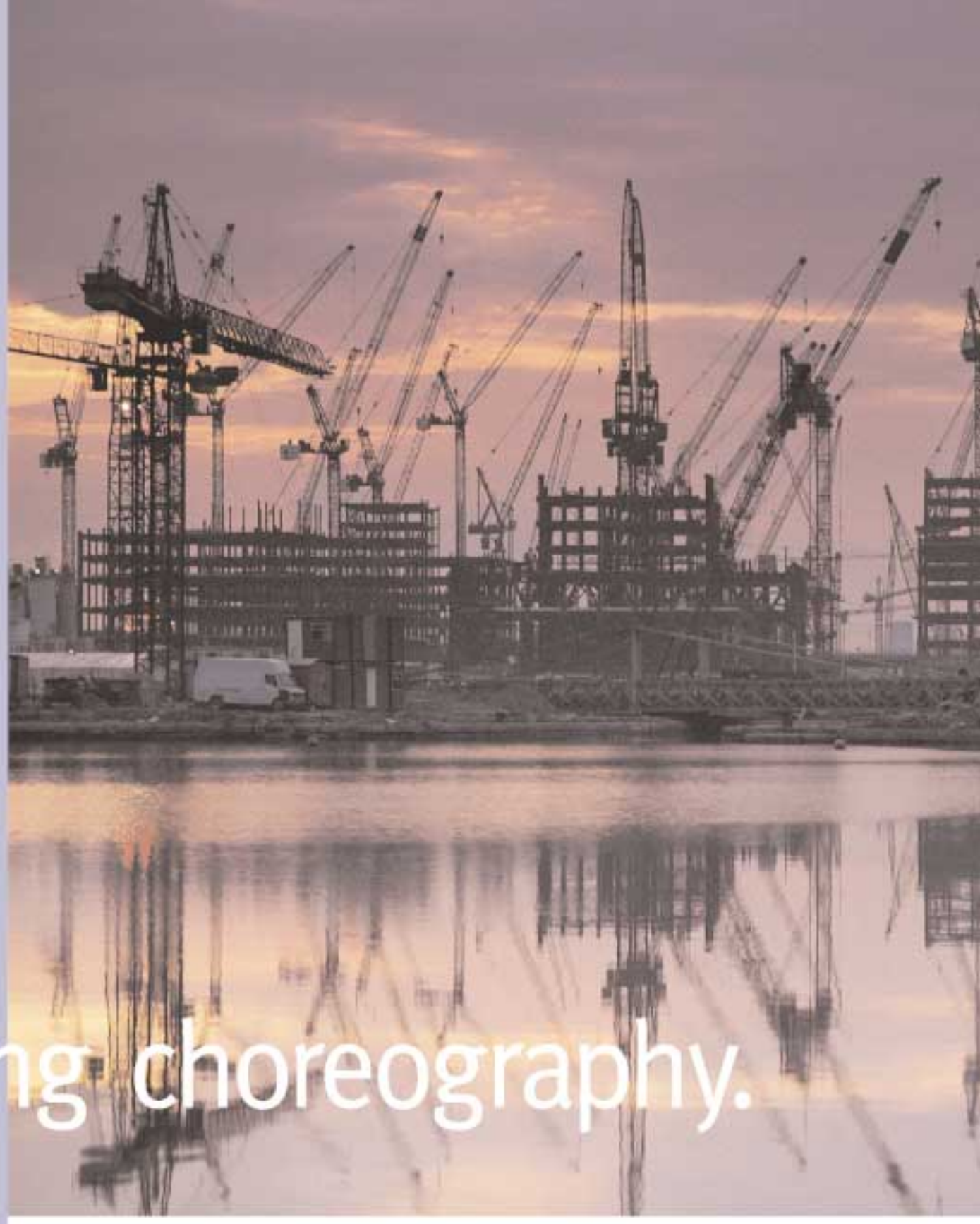

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Green Hills Launches Probe for MULTI Debugger

Software development tools, RTOS maker boldly goes into hardware business

BY EDWARD J. CORREIA

Green Hills Software Inc. is about to trek into the hardware tools business. The company has unveiled the Green Hills Probe, a device that permits developers to peer into their 32- and 64-bit embedded devices and their applications while under development, greatly simplifying the debugging process, the company says. Green Hills made the announcement and demonstrated the new device at last week's Embedded Systems Conference in Boston.

Green Hills (www.ghs.com) develops and markets embedded software and development tools, including its flagship Integrity and ThreadX royalty-free RTOSes. The probe operates with Green Hills' MULTI 2000 debugger and IDE for HP/UX, Linux, Solaris and Windows development hosts. Among the supported embedded target CPU and DSP architectures are ARM, MIPS, PowerPC and StarCore. The device also reportedly supports system-on-chip designs, including those with multiple homogeneous and heterogeneous cores.

Probe connects to a multitude of target processors with included adapters.

According to John Carbone, Green Hills' vice president of marketing, the decision to produce a hardware probe was not based on the potential revenues from its sales. "We're not trying to go into the probe business and sell as many as we can. Our main objective is to help our customers get their projects done faster. And in our experience, there aren't any good probes out there that meet all these requirements."

Using a dedicated hardware probe to perform debugging, said Carbone, gives developers capabilities not otherwise possible, such as complete control of the processor to run, halt and upload data from it, as well as to read and write registers and memory, single-step through code and set breakpoints. It also has the ability, Carbone continued, to debug interrupt- and system-level routines and problems in the ROM monitor. "A probe is a way to debug a target that doesn't have an operating system or a ROM monitor, or is just a bare board," he added.

Trace functions are available as an option, says Green Hills' Puthuff.

The probe can perform diagnostics down to the JTAG/BDM level, where it interfaces with the target processor, and can be configured and monitored remotely through a built-in Web server. It supports serial, Ethernet and USB host connections, and target debug ports include BDM, COP, EJTAG, EOnCE, JTAG and N-Wire.

Neil Puthuff, field applications engineer at Green Hills and co-creator of the probe, explained why trace functions, which permit the debugger to obtain target data and program flow information without halting the processor, are supported only as an option. "Not all processors have trace ports, so [adding a trace feature to the probe] would be a waste on many of the processors we support."

Carbone said that Green Hills has no immediate plans to make its probe compatible with debugging software other than its own. "We're satisfying a missing element to complete the product line rather than trying to forge a probe business. So there really isn't a point in selling it for use with other debuggers," but added that under the right business circumstances "we would consider it." ▮

Rappore Puts Bluetooth on Chip

Claims to eliminate CPU, operating system in wireless devices

BY EDWARD J. CORREIA

Claiming to remove some of the stumbling blocks involved in developing Bluetooth-enabled hardware, Rappore Technologies Inc. has released Bluetooth On Chip, a set of processor-specific object code that the company says permits developers to embed low-power wireless capabilities into their devices without the need for a separate CPU or operating system to handle the wireless communications.

The C object code implements a subset of the Bluetooth 1.1 specifications, including commands and events for sending and receiving Bluetooth instructions. In its base configuration, which requires about 1KB ROM, the chip acts as a Bluetooth slave.

Fewer components means lower device costs, says Rappore's Mella.

"The reason we do that is because most of the devices are responders, not initiators," said Jasper Pan, Rappore's founder and team leader for embedded software, referring to the company's main target markets, which include single-function devices in manufacturing control, medical systems and equipment diagnostics.

"Other layers of the protocol stack, such as service discovery, can be incorporated with Bluetooth On Chip, but don't have to be," added Gordon Mella, Rappore's director of product marketing. A device also may be configured to be a master and control as many as 256 slave devices, he said.

According to Mella, the main advantage for developers using Bluetooth On Chip is lowering the cost per device by reducing the number of components needed to implement Bluetooth. "In a conventional implementation, you would have to have a CPU, a Bluetooth radio and associated software, and an operating system. With Bluetooth On Chip, all you need is the microprocessor; no CPU, no operating system. Take those out of the equation."

The chip's ROM-resident microcontroller commands also benefit developers, Pan said, by giving Bluetooth independence from the operating system, if one is present. "Developers can provide a working Bluetooth solution without having to understand the multiple operating-system and Bluetooth implementation issues," said Pan.

And according to Mella, the issues are many. "If you take one of the [currently available Bluetooth] software developer kits, you see upwards of 400 APIs. These functions take a lot of time to understand. You can virtually eliminate that requirement to adopt Bluetooth" by using Rappore's product, he claimed.

Mella said that in addition to its complexity and relatively high costs, Bluetooth's evolving and sometimes indistinct specifications also have contributed to its slowness of adoption. "Issues loosely addressed in the specification or that are still evolving have caused software engineers to struggle," he said, which has led to incompatibilities. "Half the community has gone in one direction, while another half has gone in another. And obviously you're incompatible if you don't deal with issues in exactly the same way."

Bluetooth On Chip (www.rappore.com) is available now for Microchip Technology Inc.'s PIC17*xxx* family of microcontrollers. Volume-based prices are negotiated individually, and include C object code, documentation and a Bluetooth license. The company is working on a version for Intel Corp.'s MSC51 series microcontrollers but has not given a schedule for availability. ▮

IBM'S FASTER VAME 1.4 AHEAD OF ITS TIME

BY EDWARD J. CORREIA

IBM Corp. has released VisualAge Micro Edition 1.4, an update to its J2ME development environment that now includes an ahead-of-time compiler and an enhanced adaptive compiler that the company claims can execute Java code about 10 percent faster than previous versions could. The company unveiled the new version at last week's Embedded Systems Conference in Boston.

Also new is IBM's Connected Limited Device Configuration (CLDC), which the company reported has passed Sun's "Java Powered" test suite on eight target reference platforms, including *x*86 and PowerPC running Linux, QNX and Windows, plus PowerPC running AIX, and SPARC running Solaris. IBM also has released its Mobile Internet Device Profile (MIDP), which together with the CLDC can be used to create a small-footprint Java midlet runtime for memory-constrained devices. The company also has released a beta version of a Connected Device Configuration (CDC) specification and Database Enabler with SQL and DB2 support.

IBM offers free and supported versions ($99) of VisualAge Micro Edition 1.4 at www.esofta.com; both are available now. According to the company, the downloads also include release versions of IBM's personal configuration libraries and runtime components, including AWT and Corba RMI, plus JavaBeans and Applet viewer technologies. ▮

LINEO

◂ continued from page 1

from [proprietary operating system vendors] Microsoft, Wind River and others that there could be contamination issues" that would require proprietary code to be returned to the open-source community. He added that although there could be a basis for such worries, careful developers should have nothing to fear. "If you're a company that wants to protect your [intellectual property], you don't go into [development projects] haphazardly," he noted.

Montierth described the three-phase interactive analysis of the libraries included with a build performed by the new tools. "First it asks certain questions about the product you are developing, such as whether you will be charging royalties," he said. Then based on those answers, it looks at what the developer has linked to, and reports on areas of possible exposure. "It's like having a legal consultant sitting there with every developer," Montierth added, though he cautioned that the tools are not designed to take the place of legal counsel for protection against possible litigation for license violation.

The new tools also provide some convenience features. "For example, one of the BSD license requirements is to reference BSD libraries in a readme file at the root of your installation. We automatically do that for you if you use a BSD license," he said. The tools currently support 42 licenses, including Artistic, BSD, GPL, LGPL and Lineo's own, and can display pertinent areas of the licenses in question in a pop-up dialog box.

The kit also includes analysis tools for examining applications while on the development host as well as after they have been deployed to the target, he added.

Available now in general release, the GPL Compliance Toolkit (www.lineo.com) was originally released for beta testing in mid-August. The tools were officially unveiled at the recent LinuxWorld conference held in San Francisco. Pricing is set at $3,000 per developer seat. ▮

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BatterySmart 2 Has Power Usage In Hand

BY EDWARD J. CORREIA

InHand Electronics Inc., maker of hardware and software for handheld device developers, has released BatterySmart 2, the newest version of its power management utility for StrongARM- and XScale-based devices that the company claims can increase battery life by as much as 30 percent.

According to the company (www.inhandelectronics.com), the software improves battery life by detecting periods of high and low processor activity and then setting the clock speed accordingly. Developers also have the ability to control the utility's activities from within programs, the company says. In addition, an improved resource manager and peripheral drivers reportedly reduce peripheral power consumption.

BatterySmart 2 for Windows CE is included with the company's Elf and Fingertip development platform starter kits and also will be included in all future licenses of its intellectual property. ▮

RHAPSODY 4.0

◂ continued from page 1

ant environment for generating scenario-based tests, which McElroy said has been the company's most closely kept secret. Test Conductor can be used to test any segment of a project, including units, components, systems and subsystems. "Developers can specify scenarios using the [UML] sequence diagram to drive and stimulate the application under design, monitor it during runtime, and validate that the implemented functionality addresses the requirements. You can also detect errors earlier in the cycle," he said.

IN STORE FOR VERSION 4

When Rhapsody 4.0 is released, McElroy said users will see a completely revamped user interface. "We have a whole new look. We have consistent dialog [boxes] and a filterable, dockable browser," he said, that lets users select which project information is displayed. "It's easy for them to scale what they want to look at and work with."

Rhapsody 4.0 also will add document linking, which McElroy said enables developers to add hyperlinks anywhere in a project that link to documents anywhere on the network. "They may want to link to documents kept in [Microsoft] Word or some other repository. You can click on a UML metamodel inside Rhapsody and bring up an HTML page or Word document with this capability," he said. "It is great for traceability between requirements, specifications and the model under design."

Rhapsody's code-generation procedures also will be streamlined, McElroy said. "Rhapsody will generate code just for the areas that have changed. Before, we used to generate code for everything," he said, adding that time savings can be significant, particularly on large designs. Rhapsody 4.0 also will allow developers to open only their own work and reference pieces of the design being worked on by other developers, which McElroy said improves application performance.

Another new feature will be active code view, which McElroy said will enable developers working with source code to watch the UML diagrams update dynamically, and vice versa. "Now there's no longer any need to work in separate views and update the other one manually. You can work at a graphical or source-code level, and the other is kept in sync. There's no way for them to diverge. The developer doesn't have to worry about keeping the design up to date."

The new version will permit design elements to be stored in hierarchical repositories that match the configuration hierarchy they are already accustomed to. "You can break your UML model down into multiple directories so it mimics exactly what's in the configuration tool."

Also improved will be reverse engineering, which McElroy said virtually all I-Logix (www.ilogix.com) customers perform because "they have legacy code that is working and proven, and they want to visualize what it does in terms of its hierarchy, to analyze its behavior and to integrate it with new applications."

Pricing for Rhapsody will not change with the release of version 4, McElroy said, remaining at $11,000 for a single developer seat and for as little as $6,500 in quantity. ▮

News Briefs

PEOPLE

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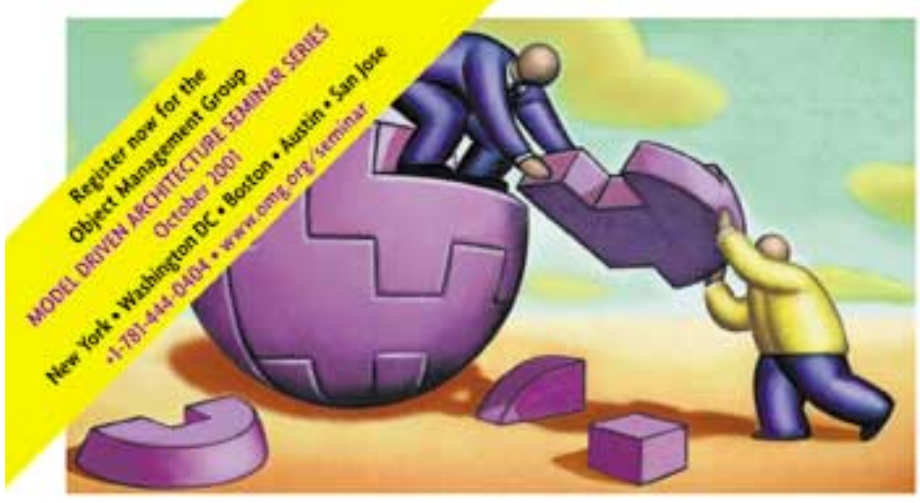
The Embedded Linux Consortium has elected two new members to its board, and re-elected five incumbents, including chairman **Inder Singh,** vice chair **Dan Bandera** and treasurer **James Ready.** Newly elected were **Kiwon Lee**, executive vice president of Samsung Electronics, as a corporate executive director, and **Victor Yodaiken**, CEO of FSMLabs, to fill the previously vacant position of corporate affiliate director and complete the board . . . **Michael Pinckney** is the new vice president of marketing for Nimble Technology Inc., an XML tools developer. Pinckney served most recently as vice president of business development at CapitalStream; previously, he had worked at Microsoft and Gartner Group.

STANDARDS

IBM Corp. has released a new Web Services Toolkit onto its alphaWorks Web site. The enhanced WSTK 2.4 for Linux and Windows, based on **SOAP**, **WSDL** and **UDDI**, now works with the company's WebSphere 4.0 app server, and includes sample implementations of the proposed **Reliable HTTP** (HTTPR) and **Key Information Service Specification** (X-KISS) protocols. The WSTK also supports the **Web Service Description Language for Java** toolkit (WSDL4J) . . . The W3C has released the **XML Signature Syntax and Processing** spec as a Proposed Recommendation; the **XML Information Set** is also now a Proposed Recommendation. Advancing to full Recommendation status is SMIL, the **Synchronized Multimedia Information Language**. The W3C has also launched an **Resource Description Framework** (RDF) validation service, at www.w3.org/RDF/Validator; enter a URI or paste an RDF/XML document into the validator's Web page, and the application will show a three-tuple representation of the corresponding data model. ▮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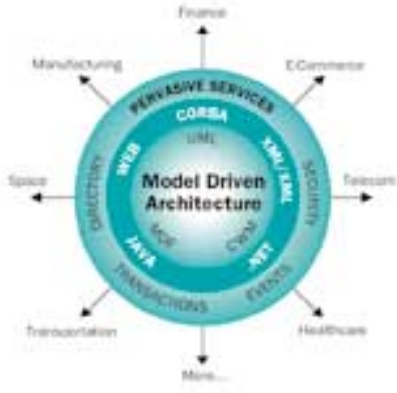

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Lessons Learned

Not all training methods are equally valuable for developers

BY ANDY PATRIZIO

In this modern era of multiple API layers for the operating system, application server, database, middleware, application frameworks, graphical interfaces and more, anyone who could keep all that stuff memorized would be considered an oddity. Plus, whole new languages and standards seem to pop up daily.

The result of this near-constant stream of change is that IT organizations are required to train staffers on an ongoing basis. Unfortunately, there are as many ways to teach people as there are technologies to learn.

There are several agreed-upon methods of training, though; it's just a matter of choosing the ones that are most appropriate for the specific organization.

First rule: Don't jump on everything that comes out. "One thing we do is ask, 'Do we need to stay up on all this?' " said Phil Moore, executive director of information technology at investment giant Morgan Stanley Dean Witter & Co. (www.morganstanley.com) in New York. "I think there's a lot of stuff on the bleeding edge that's trash and takes us a year to find out if it's any good or not." For example, Morgan Stanley held off on Java until 1999 because it felt a lot of the infrastructure wasn't there for suitable application deployment, he said.

PEER-TO-PEER

After deciding which technologies to keep up on, companies must decide how to train their employees. Peer teaching, particularly pairing a senior programmer with a less-experienced programmer, was most often mentioned as a preferred method. Most of those interviewed said their companies have a policy of sending just a few people for in-class training, who then impart what they learned to the rest of the staff.

Part of the reason for that is to keep costs down. But apart from the cost, there is the problem of applying what was learned to the company's specific business needs. "Courses tend to be fairly generic. This is how EJBs work, for example, but how do we use them?" said Kenytt Avery, manager of training for StrataSource Inc. (www.stratasource.com), a managed services provider in Irvine, Calif.

StrataSource makes heavy use of the peer-teaching method. The success or failure of the training tends to depend on the skills of the senior developer, but it's rarely a one-way learning pipeline. "Frequently, the more junior programmer has a trick or two up his sleeve, and they both end up learning something," said Avery.

There's also a secondary benefit from peer teaching: team unity. "If you can get in a group of people where pride is not the center of the universe and everyone has specialties, not only can learning be spread out but it's one of the best team-building practices out there," said Eric Whipple, senior consultant and trainer for Pillar Technology Group Inc. (www.pillartechnology.com), a training firm in Southfield, Mich.

Peer-to-peer training also represents a technique for keeping track of internal resources, and knowing what you have before looking outside the company for specialized expertise. A large corporation like Bank of America (www.bankofamerica.com) prefers to use internal resources for training first because there's a very good chance someone with the necessary skills is already in-house.

"Often when [training] is requested, there's existing knowledge somewhere in the bank with someone who's gotten training already, so we use that existing source," said Loren Schweitzer, vice president of customer service systems at Bank of America in Dallas.

Another facet of peer education is communicating with other programmers—even outside your organization. With all the developer portals run by major vendors, independently run sites, dozens of Usenet newsgroups for developers and developer mailing lists, programmers have a chance to talk with thousands of people in the same boat as themselves. "I don't think we could survive without our Usenet feed and Google, in terms of learning new things," said StrataSource's Avery.

That's especially true for newer technologies, said Suneet Shah, chief technology officer for Diamelle Technologies Inc. (www.diamelle.com), a developer of EJB components as well as a training and consulting firm in Cortlandt Manor, N.Y. "When a technology is very new, the options tend to be very thin," he said. "The availability of training usually comes a little later in time. What happens is you have early adopters out there trying to figure out how things work."

Be sure your people need what they're being taught, says Morgan Stanley's Moore.

One early example for Diamelle involved trying to make Java entity beans work properly, since they were experiencing performance problems. By conversing with other developers on the Internet, Diamelle was able to get around the problems, said Shah.

But Morgan Stanley's Moore sees the Internet as secondary to human instruction. "You cannot replace the value of having an interactive relationship, one-on-one, being able to ask questions of an instructor," he said. "For refresher courses, the Internet is wonderful and complements an instructor, but what I find with anything is eventually I have questions that [only] a human can answer."

CONFERENCE AND TRADE SHOW SESSIONS

The value of training at industry conferences, including sessions at trade shows,

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Plan the Setting

An environment conducive to learning is critical to effective developer training

BY ANDY PATRIZIO

Programming in the 21st century requires constant education to keep up on the latest developments, and if you think it's a pain to keep up, imagine what the trainers have to deal with.

Eric Whipple, senior consultant and trainer for Pillar Technology Group Inc., a training firm in Southfield, Mich., has seen all kinds of situations that were not in the least bit conducive to learning. One course was taught in a factory in which a metal wall was the only thing between the programmers and heavy machinery, and there was no air conditioning—only loud fans.

In another situation, a major hospital put him in a long room with one table that had a dozen computers on it. Things were so tight he couldn't get out of the projector's way. "It wasn't a relaxed environment at all," he recalled. "Students were already nervous, we were in uncomfortable chairs, computers were just thrown on the table. I'm not advocating feng shui for learning centers, but a comfortable, organized setting is important."

Another problem was that half the students were C++ experts while the other half were mainframe COBOL programmers, making it impossible for him to give the lessons balance. "Half the students were bored; the other half were blown away," he said. "It was impossible to create a dynamic and a speed that would keep everyone interested."

Although Whipple was recently voted Trainer of the Year by Borland Software users, even he couldn't keep all the students engaged, and didn't think that this training session went well. The moral of the story? "Good training and good courseware and a good instructor can all be sabotaged by a poor training plan on the part of the company that's offering the training," said Whipple. "A lot of the work that's needed to make training effective takes place on the company side."

When it comes to writing code, there isn't any substitute for actually programming, so classes should not be viewed as the be-all and end-all, said

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SETTING

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Kenytt Avery, manager of training for managed services provider StrataSource Inc. "You can sit in the classroom for as long as you want; it doesn't matter. You're not going to be able to write code," he said. "The classroom is good for providing background."

For Microsoft, which presents its own developer training conferences, one of the common denominators among developers at these shows is that they want hands-on training. "They want a little time with an overview of the product, but they want to get down in the dirt and start programming," said Sam Henry, technical product manager for Microsoft Developer Network.

Like Whipple, he places some responsibility on the developer and manager to know what it is they want from the sessions. "Even in generic courses, the way to get the most out of them is to know what you want to come away with," said Henry. "If you can do that, then you can make sure that if the instructor doesn't address that up-front in the normal course of things, you can ask him afterwards how to do X."

Due to the short length of the sessions and the show's tendency to cram a lot of courses in a short amount of time, developers should not expect to attend JavaOne and be writing EJBs for an e-commerce system. But trainers felt that even watered down, the shows offer an education of a particular technology's capabilities and let a programmer or manager decide if that technology is for them.

"More often than not, they give you some of the building blocks. Sessions at trade shows are great for getting an overview of the technology, but it's not strong enough to do much with it," said Suneet Shah, chief technology officer of Diamelle Technologies Inc., who finds himself on both sides of the instruction plan. Even though Diamelle does its own custom programming and its people need training, it also offers training, particularly in the Java market.

When looking for education, Shah thinks the smaller training companies might actually be a better choice than the vendors themselves. "Sometimes being the best product company doesn't mean you're the best company for everything," he said. "If that was the case, most of these smaller training and consulting companies would be out of business."

Not surprisingly, Pillar's Whipple also supports the independent trainer. "If they turn you over to a third-party, you shouldn't be worried about it, because they want you to have success and be excited by the product," he said.

Microsoft agrees on this point and often turns over training requests to recognized training companies. "We think of all of our partners as an extension of Microsoft," said Henry. "Before someone can teach a Microsoft curriculum, we put them through a training process and get them up to speed. They take tests and know the technology well."

The bottom line for providing your programmers with good training is to make a little effort on your own, and make sure they go in knowing what it is they must learn, say the trainers. Don't send programmers to a two-day conference on a new Java IDE and expect them to rewrite your mainframe systems, said Whipple, who once had to deal with students who couldn't keep up with the class because they couldn't type. "A lot of unreasonable expectations cause a lot of unnecessary angst on the part of my students," he said. ■

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LESSONS

◂ continued from page 25

is an area of contention among IT organizations. Moore views most shows as primarily advertising and marketing gatherings, but stresses the value of networking with other programmers while there.

"One of the biggest weaknesses would be to let our programmers grow up in the Microsoft environment and only the Microsoft environment and not know how other people do things," he said. "I think it's important that people see those different perspectives on how problems are solved, because it will make them a better software developer."

Bank of America's Schweitzer doesn't see a lot of in-depth training to be had at conferences and trade shows. "While you get a lot of info from a trade show, it's not going to be a substitute for an in-class training experience," he said. "They don't go into depth. It's almost their nature that the sessions are not something that would be a class." Learning how to program an Apache server using Borland's Kylix, for example, can't be taught in a 75-minute class, he said, adding that he prefers to have a Borland instructor spend three days with IT staffers giving hands-on instruction.

StrataSource's Avery concurred. "If you are looking to learn the fundamentals, I'm not sure it's a good idea to get experience in just a few hours," he said. "On the other hand, when there are new technologies, like XML and SOAP, where else are you going to learn them at that point? Great thing about trade shows is there will be tutorials on things that are brand new."

In the end, they all agreed that the best sources of education are the programmers themselves. "People end up being self-motivated," said Morgan Stanley's Moore. "People will come in out of nowhere and say, 'I've been looking at technology X, let's try it out.' Probably the most recent example would be Jini. One of our developers said out of nowhere that he's been looking at it and thinks it might apply to some of the problems we've been having." ▮

TIPS FOR TRAINING

Pillar Technology Group Inc. senior consultant and trainer Eric Whipple offers the following tips to consider when preparing to offer in-house training:

- Understand each student's existing skills before sending him or her to training. Don't put five legacy programmers and five C++ programmers in the same class and expect them to get the same thing out of it.
- Develop a realistic expectation of your programmers. If you demand too much, they will leap off cliffs trying to meet your expectations.
- Measure your students' comfort with new paradigms and techniques, and approach training appropriately. Requiring legacy people who've been programming on a mainframe for 25 years to suddenly learn object-oriented programming might make them defensive.
- Understand where you think you're going to take this technology. A lot of times people will take a class and put what they've learned on a shelf for a year. If students understand beforehand how they will use the technology, then they can come to a class and build bridges in their minds between the class and what their own goals are.
- If you're bringing in an outside instructor, try to find out as much as possible in advance about the class and instructor.

Meet the .NET Developer's Boss

Last week, she finished looking at the betas of Visual Studio.NET and other portions of Microsoft's .NET strategy. It's not perfect, but it'll do. She's been successful in reducing the number of deployment platforms in the server room to three: Windows, HP-UX and AS/400. Although Linux and J2EE have a lot of potential, the CIO agrees that for now, it makes more sense for her team to continue following the Microsoft track to leverage huge investments in software, training, and code.

But that doesn't mean that she blindly follows Redmond's advice. Windows and COM+ are only two pieces of a very complex puzzle. Her department still has a lot of programmers who know Visual Basic 6, and she has no intention of retraining them to use C# or C++, or forcing them to abandon Delphi, JBuilder or Rose. Somebody has to be the voice of reason and it can't be the individual programmers, who care more about cool interfaces and not enough about component reuse and cross-project standards. That's why she controls the checkbook.

What does she read? Not the Visual Basic or code-centric programming magazines. They're too hung up on technical details, and immersing herself in SOAP APIs won't help her manage a 40-person software team. Not Web sites. MSDN is great for explaining Microsoft's newest buzzword, but doesn't provide the balanced big-picture view she needs. She needs to see it all: all the vendors, all the languages, all the platforms. She needs to know the trends, the products, the alliances, the initiatives, the NEWS, and what it all means.
That's why she reads SD Times.

SD Times SOFTWARE DEVELOPMENT

The newspaper for software development managers

EDITORIAL

Viva Voice

To listen to many industry pundits, the future of distributed computing is wireless and mobile. Remember the dreadful term "m-commerce"? That means, to the major technology suppliers, that the use of cellular telephones and handheld computers as personal Web browsers, e-mail clients and data terminals will someday rival desktop Web browsers in popularity. One tough challenge for developers—and thus the industry—was that each handset or handheld used its own wireless protocols, microprocessor architecture, operating system and service provider.

Solutions to that problem varied. One of the first serious attempts was the Wireless Application Protocol, which relied upon specialized software and a microbrowser. Although vendors are still pushing WAP, it's clear that it didn't catch fire. A second attempt was to embed a full-fledged application execution environment in the phone; although Sun's Java 2 Micro Edition is getting a lot of attention, with numerous J2ME-equipped handsets on the market, the technology also hasn't yet reached escape velocity.

Yet there are two highly standardized data-communication technologies present in every cellular telephone handset and compatible with every service provider: voice and tones.

On the input side, continuous "Star Trek"-style voice recognition remains a challenge, as anyone who has wrestled with software like IBM's Via Voice or Dragon's NaturallySpeaking can attest. For handling discrete commands, out of a limited vocabulary, voice recognition's performance is steadily improving.

For output, speech synthesis is far from mature, but it too is making strides, and for short messages can prove adequate to the task—far better, perhaps, than squinting to read a tiny LCD display while driving down I-95. For longer messages, speech is totally unsatisfactory for most individuals, and its linear playback characteristics can prove frustrating.

The second technology, tones (technically referred to as DTMF, or dual tone multifrequency), is famous for its use in call centers and automatic call distribution systems. While the classic "press 1 for pizza; press 2 for pepperoni" may be frequent fare for late-night television comedy, it's also effective and instantly familiar to nearly anyone who uses a telephone today.

Several companies have been working to integrate audio-based data formats into their back-end data centers; Oracle is taking this one step further, with voice integrated into the forthcoming release of its wireless application server later this year (see "Dial 9i AS to Call All Applications," page 1). Doubtlessly, Oracle's competitors will be making similar moves to add voice to their app servers or portal software.

Will voice-enabled software eliminate the need for wireless data, microbrowsers and embedded runtime engines? Of course not; the markets for cellular computers will grow as the software becomes more sophisticated, embedded microprocessors become faster and less expensive, memory and displays mature and battery consumption is reduced. But by giving customers the choice to interact with data services by voice, enterprises—and vendors—will be performing a valuable service. ▮

GUEST VIEW

GIVING DOCUMENTATION ITS DUE

Software that comes with poorly written technical documentation is not only irritating for the consumer, but ultimately quite costly for the developer. Poorly written technical documentation results in higher volume in calls to the service center as well as more product returns, not to mention loss in repeat business and credibility in the marketplace.

BONNI GRAHAM

Because bad documentation can cost developers so much, I am surprised that many software publishers fail to invest in quality manuals. The quality of software manuals has a tremendous impact on the success of the product in the marketplace. It is not an exaggeration to say that a manual can make or break a product.

In this day and age, many businesses realize the importance of investing in quality hardware and software. But these consumers will never know how good the product actually is if they cannot figure out how to use it. Quality documentation is the key.

PERCEIVING IS BELIEVING

For one thing, perception can be more important than reality. A developer can come up with a phenomenal product that will fail miserably in the marketplace because consumers *believe* that it is difficult to use. This perception may be largely based on their perusal of the user's manual.

When a company upgrades its software that comes equipped with poorly written training manuals, it loses an average of four weeks in productivity as workers learn the new system by trial and error. That consumer will never differentiate between the product and its documentation. All they will know is that they lost money with that software.

A client of my documentation company came to me with a costly problem that demonstrates the bottom-line benefits of providing consumers with quality documentation. One of the world's leading manufacturers of electronics equipment, the company had experienced a disproportionately high rate of return on one of its products. Close to half of all consumers that purchased this product returned it to the store for a refund, or exchanged it for another component—often sold by this manufacturer's competitor.

The company was baffled because the product was excellent. Millions of dollars were invested in its development of the product, and test groups loved it. The problem was that the instruction manual was poorly written and frustrating for consumers to use.

The manufacturer had spent tens of millions of dollars in research and development, and marketing of the product, but skimped on production of manuals by having engineers in Japan write them. The manuals were then translated into English, but were never quite understood by the average American consumer. As a result, the company lost

GUEST VIEW

DISCOVERING DESIGN BY CONTRACT

A little-known development practice called Design by Contract offers development managers a number of benefits. It can help you ensure that team members document their code. It brings you the increase in team productivity that stems from having clearly documented code. It even helps you improve product reliability.

So what is Design by Contract? In a nutshell, DbC is a formalized way of writing comments to incorporate specification information into the code itself. DbC originated in Eiffel and is starting to turn a lot of heads in the Java community. Basically, DbC involves developing contracts that express what the code's requirements are and what the code is supposed to do. These contracts describe requirements like:

- Conditions that must be satisfied before a method is invoked.
- Results that need to be produced after a method executes.
- Assertions that a method must satisfy at specific points of its execution.

In other words, the contracts describe the assumptions the developer made when writing the code, and the assumptions that the system can make about a piece of code. For instance, if the developer assumes that a variable will never receive a null or negative input, he should include this information in a contract. Likewise, if a developer writes a piece of code that is always supposed to return a value greater than 100, he should add this information in a contract so the developers working with the other parts of the application know what to expect.

ADAM KOLAWA

So what's your payback for convincing developers to use DbC? First of all, DbC solves the seemingly age-old problem of getting developers to document their code. If you're serious about having developers document their code, you need some way to check that the code is accurately and thoroughly documented. Before DbC, this meant having a manager or developer manually review the code and comments—a time-consuming (and thus costly) procedure.

If your team is using DbC, it's much easier to require that code is clearly documented. Because DbC contracts are written in a standardized format, you can actually check the documentation automatically—just obtain or develop a technology that can read through the code and comments, then alert you to any instances in which comments are missing or incorrect. If you give your developers a fast, easy way to check if their code

far, far more than it saved.

In technical documentation, there is a widely accepted theory called the "Halo Effect," developed by industry leader Karen Schriver, author of "Dynamics in Document Design" (John Wiley, 1996). She provided several focus groups with high-quality manuals for electronics equipment and asked them for feedback on the product. The groups praised the product, though they had never actually seen or used it. Schriver coined the term "Halo Effect" to describe how good documentation earned the product a halo in the eyes of the consumer (regardless of whether or not it deserved it).

My firm was curious to see if the opposite held true. We brought several groups to our San Diego office and asked them to judge products by showing them poorly produced user's manuals. None of the participants ever saw the actual products, yet 90 percent said they believed they would be unusable, and 60 percent said the products were unreliable! When pressed further, they said that they had to assume that the poor quality of the manuals reflected substandard work on the manufacturer's entire line of products. We call this the "Horns Effect."

Repair and service centers that are provided with low-grade technical documentation can also be hazardous to a developer's economic health. When my company was researching how the quality of repair manuals affects sales, we interviewed technicians from several shops. They told us that if a product came with substandard technical documentation for them to use, they would likely box up the product and return it to the manufacturer rather than attempt to fix it themselves. And they would not recommend high-tech equipment that did not come with proper quality documentation.

Good documentation is essential. There's just no getting around it. Documentation should not be just an afterthought. It is an integral component in the success—or failure—of any commercial software product. ▮

Bonni Graham is president and CEO of Manual Labour, a San Diego-based technical documentation firm.

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is documented correctly, you can feasibly require that all code meet certain documentation standards before it is checked into the source-code repository.

REAPING DbC'S REWARDS

Once your team starts using DbC, you can all start reaping the benefits. The first perk you'll probably notice is the time and money you save by having accessible, readable documentation. Because the specification information is included in the code itself, you can rest assured that the specification will never be lost and that developers and testers will not waste time hunting down the most recent specification for the piece of code they are working on. (You would be surprised to learn how much time is wasted in searching for misplaced or lost specs!) Also, since DbC contracts are a structured, concise style of documentation, it is easier (and faster) for developers to create documentation and to understand one another's documentation. This reduces the number of errors that stem from misunderstandings, increases developer productivity, and makes it easier to share code among projects.

In addition to providing the above benefits, DbC—like any other good innovation—is sure to be used in many ways that its inventors did not envision. For example, it might be possible to use DbC to include use cases in contracts. Even if additional applications for DbC are not discovered, I honestly believe that it is the best thing for development managers since sliced bread. DbC provides managers with an easy way to ensure that developers are documenting their code and to ensure that anyone working on that code can quickly and easily determine what the code is designed to do. If you're responsible for a development project that lacks focus or is overly buggy, DbC can help you regain control over it. ▮

Adam Kolawa is chairman and CEO of ParaSoft.

LETTERS TO THE EDITOR

MICROSOFT: 20/20 HINDSIGHT

I read with interest the SD Times editorial in the Aug. 15 issue ["Windows XP and the Microsoft JVM," page 30], which discussed Microsoft's decision to remove our Virtual Machine from the forthcoming Windows XP operating system. I'd like to answer the questions posed at the editorial's conclusion.

First, you asked why we included the VM in the first beta release of Windows XP, and removed it during the second beta. If you look at the timing, we made the JVM an install-on-demand component in the first possible build we had after we settled the lawsuit with Sun. Beta 1 of Windows XP was available Oct. 31, 2000. Beta 2 was available March 26, 2001. The Beta 2 build was locked down before the settlement was final, so we changed the JVM to an install-on-demand component on April 12, 2001, in build 2428 of Windows XP.

Second, you suggested that we made this decision in a stealthy fashion, removing the JVM without notice. To begin with, there was no effort to hide the change; at the time, Microsoft didn't view this as a major change. Remember that Microsoft had removed the Java Virtual Machine as part of its standard install for Internet Explorer some time well before this change in Windows XP. More importantly, the change from a side-by-side component to an install-on-demand component affects so few customers that Microsoft didn't make a public statement. Hindsight being 20/20, and after seeing the resulting firestorm, we should have made a public statement about when and why the changes were made.

John Montgomery
Group Product Manager
.NET Developer Platform
Microsoft Corp.

A WORD FROM THE 'FEW'

From Andrew Binstock's assertion in the Aug. 15 issue ["A Few Good Tools," page 33] that "few will disagree with the assertion that Java lacks the high-quality development tools found in the C/C++ arena," it is apparent that he is either not familiar with or has not used Visual Age for Java. Although this IDE does not have the kind of hooks and wizards that Visual Age C++ has as far as leveraging the OS, which are really used mostly by nonprogrammers, the core features that it provides as far as managing source code, navigating through source code, and editing and debugging source are far more powerful than what Visual C++ or any of its competitors offer. I make the disclaimer that this does not necessarily apply to GUI-related development since I do not develop in that space.

Scott White

KEEPIN' IT REAL

Apropos of David Rubinstein's Aug. 15 column on the VC terrain ["Adventures in Venture Capital," page 38], I must—in the interest of shameless self-promotion—point you to this site: www.jcoolplusplus.com.

It is the site of the first-ever rap about Internet start-ups, written and performed by the first-ever rapper with a master's degree in computer science.

Nathan Meyers
Software Architect

Editor's note: Yo, what up, boo? This site is wack! Homeboy be rhymin' while the unemployed are cryin'. The only thing worse is your timin'. Word! Peace, I'm out.

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IS WEBSPHERE 4.0 4U?

Users of IBM Corp.'s WebSphere application server have for years grumbled about various aspects of the product, not the least of which was the difficulty in installing and configuring it. In addition, they have been bothered by the tight integration between WebSphere and IBM's DB2 database and VisualAge for Java environment. Other complaints are the lack of J2EE compliance and a generally slow response to emerging standards.

IBM had to do something in response—partially because the Java app server market is getting more crowded with the arrival of a credible Oracle offering, and partially because the niches are being filled rapidly by specialized J2EE implementations (such as those from Persistence Software and Unify). If IBM wants to stay in the game, it had to get serious about complaints and also start revving its product more often. WebSphere 4.0 is the important step in this direction.

The first thing to note is that the product is J2EE compliant. The Java Message Service implementation it uses is a set of JMS wrappers around IBM's MQseries middleware. MQseries is known for its dogged reliability, at the cost of some performance. Hence, this choice is reasonable and consistent with the company's concern for enterprise customers who need scalable and reliable solutions. I am disturbed, however, that WebSphere 4.0 lacks a JMS listener component. This apparent hole should be plugged in the September release of the Enterprise Server edition. Message-driven beans (à la EJB 2.0) are not yet supported. WebSphere's JMS is XA compliant, meaning it can participate as a resource in two-phased commit (2PC) transactions that employ the Java Transaction API (JTA) to a transaction monitor.

MIDDLEWARE WATCH

ANDREW BINSTOCK

In keeping with the current fad of Web services, 4.0 ships with integrated support for UDDI, SOAP and WSDL. It already supported XML functionality and has increased this commitment by, among other things, offering EJB 1.1 and XML descriptors. EJB 1.1 came none too early, as many frustrated developers will attest.

While nothing in this release suggests that IBM has lessened the tie-in to Visual Age for Java, there does seem to be some grudging recognition that customers were not wholly happy with the close association to DB2. According to the product manager, Jeff Reser, DB2 is no longer required and, in fact, specific support for other databases has been added in the form of new connectors to Oracle and SQL server (and presumably Informix). The connectors rely on the J2EE Connector Architecture, which is the emerging Java standard for connectors and adapters.

The Connector Architecture (which would be called JCA were that acronym not already allocated to the Java Cryptography Architecture) works a lot like JDBC with the additional ability to communicate natively with applications such as PeopleSoft, SAP and Siebel that are not databases. The Connector Architecture also specifies connection management including connection pooling (although WebSphere has not implemented this feature yet) and transaction monitoring through the XA interface discussed previously. Quite apart from its presence in WebSphere and its likely incorporation into the upcoming J2EE 1.3, the Connection Architecture promises to have a significant effect on vendors like Actional, TIBCO and WebMethods whose products are remarkably similar to the feature set the specification requires. Watch this space for further developments.

The final improvement, which admittedly is invisible, is the claimed merger of codebases among the various WebSphere editions. Currently, the standard, advanced and enterprise editions of WebSphere offer escalating feature sets based on different codebases. This is not uncommon at IBM. Longtime watchers know that DB2 for NT and DB2 on the mainframe (where it originated) are not only different codebases, they are completely different products with virtually nothing in common. Calling them both DB2 was nothing more than a marketing ploy. As to WebSphere, this release was supposed to merge the codebases. This is good for IBM, but it makes me just a little uncomfortable about moving to 4.0 until the first set of patches comes out. You change the codebase on me, and I want to see it tested before I migrate. The code integration is not complete either. For example, the September release of the JMS listener will appear only in the Enterprise Edition. The other editions will have to wait for this feature to drift down to them.

There is no doubt that WebSphere 4.0 is a needed release. The addition of J2EE compliance and EJB 1.1 implementation goes a long way to catching up to the rest of the Java app server market. Moving away from DB2 will also help. But I would delay upgrading until the product is seasoned by the early adopters. ▮

Andrew Binstock is the principal analyst at Pacific Data Works LLC. Reach him at abinstock@pacificdataworks.com.

OFT IGNORED: EDUCATION AT THE SOURCE

More than a decade ago, I decided I wanted to buy a motorcycle. Protective parents stopped me in my teens, and a lack of funds straight out of college delayed me further. But once I had the funds, I realized I had another problem—I didn't know how to ride. I asked friends, but they were either busy or too far away, and I called driving schools only to be shocked by how much they charged. Only when I'd all but given up did I come across the secret: the American Motorcycling Association (AMA).

Since one of my noncooperative friends had raced motorcycles in events sponsored by the AMA, I certainly knew of them. But it never occurred to me to check there for neophyte classes. Turns out they had (and still have) a nationwide program of riding instruction geared to beginners and emphasizing safety and good riding habits. And it only costs $50 in my home state.

You can guess where this is going. If you're looking to stay abreast of new .NET technologies or you're a rank beginner looking to get started with Microsoft programming, a good place to begin is at the source. I've known about Microsoft's MSDN Online Web site and product news organization for years. Indeed, I get a box of CD-ROMs regularly, just like a MSDN or TechNet member. But I've always muddled through learning on my own, reading in-depth press kits or by appealing to the charitable nature of more learned associates. Guess what? You don't have to.

I got referred back to MSDN Online (msdn.microsoft.com) a little while back and found so many resources there that I literally spent days digging around. You don't even have to be an MSDN member, though that distinction will get you access to even more information. Most of these resources, however, are available to the general public.

WINDOWS WATCH

OLIVER RIST

Frankly, I'd always dismissed MSDN Online as a Microsoft propaganda engine, which it really used to be a long time ago. But what I saw recently, while still definitely in the Redmond Marketing Camp, is more of a tutorial and technology resource site than anything else. Sure, the writing is all pro-Microsoft, but that's the short of it. The long is usually an in-depth description of a new Microsoft technology or product platform. And by in-depth I'm talking right down to example code and downloadable sample code as well.

And while you'll find around 20 separate columnists, none of them seem to be marketing flaks. Typically, they are turning out decently written beat columns concerned with providing a monthly hands-on example of Microsoft coding. Everything from Visual C++ through ASP.NET with (at the moment) special emphasis on Visual Studio.NET and especially Visual Basic.NET and C#.

Microsoft is even trying something in live Internet instruction with the new "The .NET Show." The present episode concerns Visual Basic.NET, and does toss out some propaganda along the lines of Visual Basic's evolution into the .NET Framework. But then it goes straight to a hands-on example of how to upgrade from Visual Basic 6.0 to Visual Basic.NET and how to upgrade Visual Basic 6.0 applications the same way.

Follow the show's examples, and you'll be ready for Microsoft's Hands-On Visual Basic.NET Lab. This is a seven-chapter Web-based course in Visual Basic.NET that's useful not only to existing Visual Basic developers but to any newbies who are willing to buckle down as well. It's slick, professional and, best of all, free. Admittedly, Microsoft expects you to have quite the little learning infrastructure (Windows 2000 Advanced Server, SQL Server 2000, all requisite service packs, and so on), but the lab describes how to set all this up, and separate resources within MSDN point you to where these applications are freely available in demo or single-user mode.

If I have any complaints about the site, it would be that there is almost too much information. It's actually difficult to find what you're looking for once you get a glimpse of the sheer volume of information available. And while the site does have ongoing newsgroup discussions about its products, the content here could be managed a little better with some more interactive moderators. Right now, it's the usual "I've got a problem…" type stuff when it could be a great way to get discussions rolling on implementation strategy and user acceptance of new products.

If Microsoft is looking to capture mind share for .NET, I've got to admit this is a great move. By making professional-level instruction in its products and technologies freely available over the Web, Redmond has a much better chance of capturing the interest not only of existing programmers, but especially up-and-coming youngsters just entering the field. For managers of development shops or departments, MSDN now represents a viable entryway for corporate training—with no impact on the budget. No, you won't get your certification this way, but it's a great place to get started. ▮

Oliver Rist is a freelance technology journalist and vice president of technology at AIC Inc. He can be reached at orist@mindspring.com.

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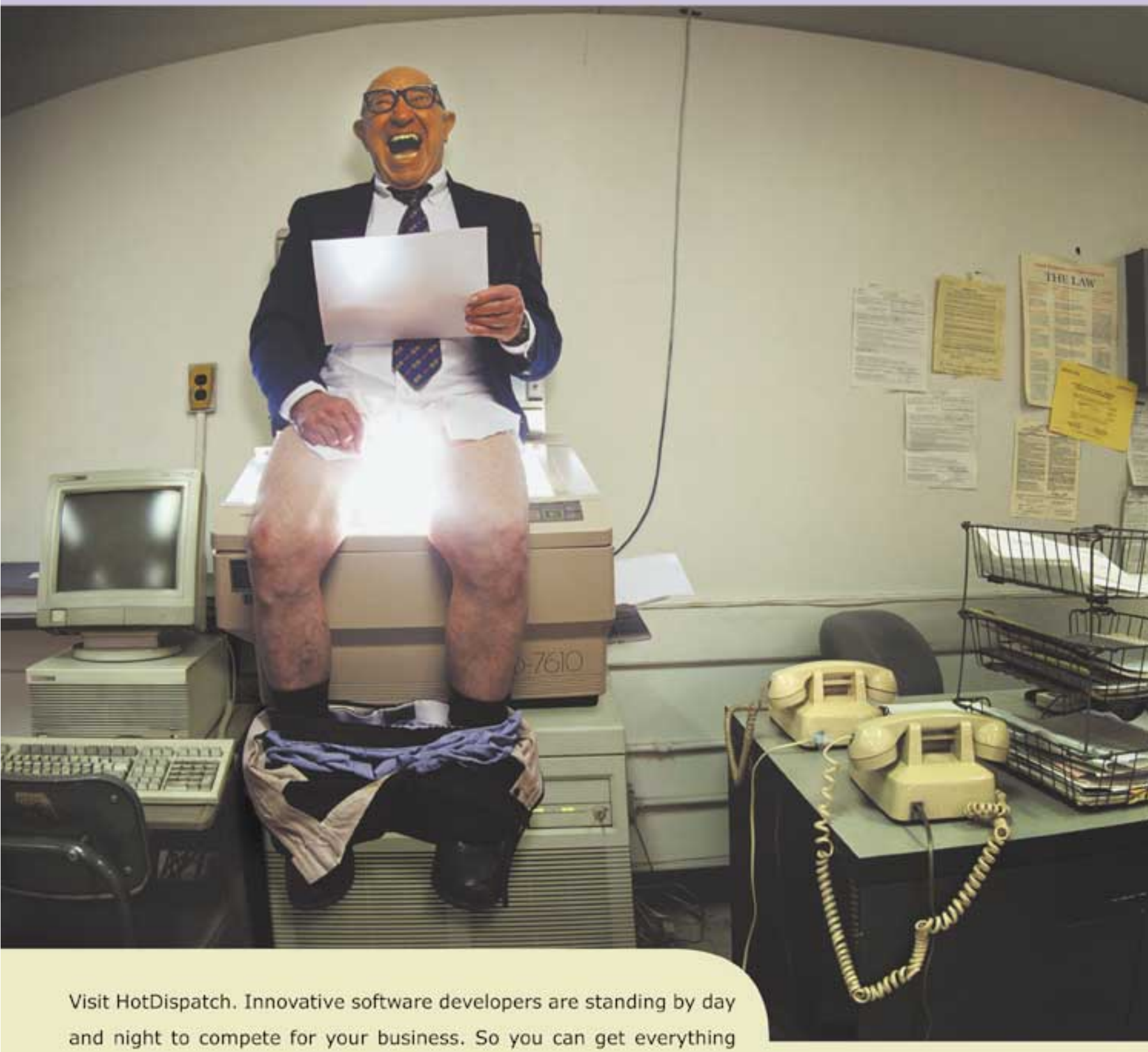

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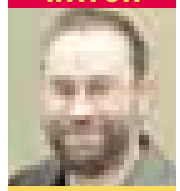


STEVEN J. VAUGHAN-NICHOLS

You knew it in your heart that someday, somehow, Java would become the No. 1 programming language in the world. Well, according to Evans Data Corp., by sometime next year about 55 percent of North American developers will spend at least some time working in Java.

Java's gain will be C/C++'s and Visual Basic's loss, according to Evan's vice president of research, Janel Garvin. In 2002, she expects only about 51 percent of programmers to still be working in C and C++. This won't be a slow process either. According to Garvin's numbers, Java developers will be about 60 percent of the total programmer population by the end of 2002.

Java programmers aren't just writing applets, it seems. Evans also found that besides writing applications and enterprise level programs, 32 percent of wireless developers are targeting Java and J2ME devices; 24.5 percent are using Palm OS, and 22.3 percent are targeting Windows CE. Not only is Java popular, it's now being used over the entire computing spectrum.

As for C#, Microsoft's pride and joy, it's not even a flyspeck on the map yet.

You don't have to look far to see why Java has become so popular. It used to be that Java's main weakness was speed. And, sure, well-written C or C++ apps still run rings around even the best Java programs—but with bottom-end systems at CompUSA coming with 800MHz Pentium IIIs and 128MB RAM, few will even see those milliseconds of difference. And, bottom line, the user's experience is the only experience that matters.

Now that Java Native Interface and garbage collection have matured, making network-aware applications is now easier than ever. While Perl, CGI and even awk and sed will always have their fans, if you want to build solid object-oriented and, above all, maintainable Web services, many companies are now turning to J2SE and J2EE.

In addition, Java now has a gigantic library base. You can find a class for almost every need without having to do custom programming. Never underestimate just how much time this fundamental object-oriented approach can save developers.

And, speaking of classes, the young programmers, whether they're coming out of junior high or a local university, are now learning Java as their first language. Oh, they'll get some C/C++ too, and some of them will get some Visual Basic, but most of the newly minted programmers I come in contact with know more about Enterprise JavaBeans than they do about Microsoft Foundation Classes.

Java's not perfect, of course. For instance, if I'm going to use a logging tool, should I use Log for J from the Jakarta Open Source project or the logger in JDK 1.4? I don't know, and I suspect most developers don't know either.

Still, for all that we may love Java's programming virtues, much of Java's success is due to C and C++'s failures.

Don't get me wrong. If you're writing system-level stuff, C and C++ are the only way to go. In fact, you could call C++ the assembler for the '00s. When it comes to take-no-prisoners programming to bare metal, it's what I'd use. But, beyond that, they've both, especially C++, become a fat-laden monster of a programming language.

Say for instance that you really wanted to do significant work in C++ in Windows, you really need to know, oh, I don't know, say Win32 *and* Microsoft Foundation Classes *and* Active Template Library *and* COM+ for starters, and soon you'll have to know Common Language Runtime. How many component abstractions can you shovel on one low-level language anyway? And just try—Microsoft dares you!—to use them together. If, by the by, that is your fate and Java's not an option, check out NuMega's BoundsChecker. It may be your last, best hope.

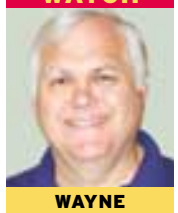
Worse still, as a manager, where are you going to find programmers who know all that and can get projects done within oh, say, half-a-year of a deadline? I mean, even though C was my first true love in languages, is there a C programmer alive who hasn't ripped his or her hair out over something that should be as simple as debugging a double-linked list? I don't think so. Maybe your Java programmers never met a deadline they could ever meet too, but given an application program project on a tight deadline, I know which language I'd choose to use.

So hurrah for Java for rising to the top. But, now, how does it stay there? Microsoft is doing its best to kill it off with C#. Python and Ruby are gathering steam. If Java wants to stay on top, Sun and the Java community must continue to improve it. In computer languages, as in baseball, you're only a champion one year at a time. ▮

Steven J. Vaughan-Nichols has been writing about technology for more than 15 years and also has worked as a programmer for NASA and the Dept. of Defense. Reach him at sjvn@vna1.com.

CHECKING PASSPORTS

WEB WATCH



WAYNE RASH

There's no doubt that you've heard about Passport. In fact, you may already have a Passport, and there's no doubt that you'll find yourself under some pressure in the near future to accept Passports. Before you do, however, you might want to give some careful thought to the implications of accepting Passport as a means of identification.

You've probably guessed by now that we're not talking about those blue booklets with cardboard covers that you use to gain entry into other countries. Nope, not at all. Instead, we're talking about Microsoft Passport, and you can expect to see and read quite a bit about it in the fairly near future.

For those who aren't sure, a Microsoft Passport is a form of digital identity. Users sign up for Passports in order to use some of Microsoft's services, such as instant messaging or the free Hotmail service. In its simplest form, a Microsoft Passport includes the user's name and address. In the future, however, users will be able to add personal information such as credit-card numbers to their Passport profile.

From the enterprise perspective, you need to make arrangements with Microsoft to accept the Passport service (see www.passport.com/Business). There are two kinds of Passports, one called the Express Purchase Passport, and the other for single sign-on. Microsoft would like you to use both so that you have the single sign-on for authentication.

Once the contract is signed, you get access to Microsoft's database of Passport holders. You'll need to clearly show the link between your Web site and the Microsoft database, and you'll need to display the Passport icon on your Web site. If all you're doing is implementing the Express Purchase, that's about all there is to it, although it will take a couple of days to put everything in place. If you're implementing single sign-on, then you'll need to install some support code on your Web server. (Guess which Web servers are supported, by the way.)

Once you've installed Passport support, you no longer have to authenticate users yourself. Assuming that the user has a personal Passport, all you need to do is accept a digital signature, and you'll get the name, country, language preferences and the like from Microsoft. If the user has put credit-card information into the Passport, then you can retrieve this information if the user opts to use one of those credit cards to make a purchase.

The result, as Microsoft describes it, is to make authentication both easier and more secure for companies, and to make credit-card transactions more secure for users. Microsoft also claims that Passport acceptance will drive users to your site because it will be easier for them to sign in, and to buy things.

Sounds good, doesn't it? A technology that dramatically eases the process of authentication, makes credit-card transactions easier and, in the process, costs your business less. But is it really a good idea?

A lot depends on you and your business, but despite its advantages, Passport may not exactly be the best thing since night baseball. The biggest reason? The names.

Those names stay in Microsoft's database. You have to sign a contract to use Passport, and one of the terms of the contract is an agreement never to share, sell or otherwise use the names you get from Passport. They are for your transaction records only, and for shipping items you sell if you own a commerce site. You can't create mailing lists, and you can't earn money renting your list out to others—as you could if you created your own customer database.

In addition, you have to depend on the integrity of Microsoft's servers and the Internet links to them. If there's a problem with Microsoft's servers, you won't be able to authenticate a visitor to your site, and you won't be able to access those credit-card numbers. Thus, you'll need to have a standby authentication system in place, and a way to accept credit cards if Microsoft is unavailable. Of course, you'll need that anyway, if you want to be able to do business with individuals who choose not to work with Passport.

And, of course, you have to worry about Microsoft's ability to keep that database secure. While Microsoft has made a number of heartfelt claims that everything is secure, it has made similar claims a number of times about a number of products, and has been proven wrong on many occasions. If names and credit-card numbers were to leak out in some manner, do you really think your customers wouldn't come looking for you?

While there's no question that the number of Passport users will increase dramatically in the near future—Microsoft says it intends to push aggressively for sign-ups when Windows XP launches in October—it's not clear that it's necessarily a good thing for your Web site or your company. And if it is a good thing, it's even less clear that it's a good thing to use the Passport exclusively. ▮

Wayne Rash is a technology journalist and consultant. Reach him at wrash @mindspring.com.

COBOL'S BACK IN (MICRO) FOCUS

It has a respected, recognized name in the industry, with a solid product line and a large customer base. It has venture funding lined up as it looks to make a move into the world of Web services. It's a start-up. It's a 25-year-old success story. (Stop fighting! It's both!)

The company is Micro Focus, which a month ago was spun out of Merant International Ltd. as that company sought to focus on and strengthen what had become its core competencies in data connectivity and enterprise change management. The original mission—COBOL development tools—seemed to be forgotten, or scuttled to the back burner as Merant, formed three years ago as the result of Micro Focus' acquisition of Intersolv, pushed the Egility enterprise management solution. That, too, has been scuttled. As for Micro Focus, the folks there are excited to be working without the constraints Merant unwittingly placed on the division.

INDUSTRY WATCH

DAVID RUBINSTEIN

"There were some cultural differences the company never quite got its arms around," understated Micro Focus president and CEO Tony Hill during a recent interview. "When you buy a company, and the head of the company you bought becomes your boss, you can begin to see the difficulties Merant faced." Hill referred to the departure of Micro Focus CEO Martin Waters shortly after the merger; his replacement was Gary Greenfield, who had been CEO of Intersolv. "I've heard us referred to as the poor stepchild at Merant, and there was some element of frustration we felt. Now there is a palpable sense of excitement, and there has been a tremendous release of energy."

Micro Focus, Hill said, wants to become an enterprise development company. (Don't they all?) It plans to do it by building a bridge that will allow COBOL applications to cross over into the world of Java and Web services, with legacy application transformation and integration holding up the middle.

The move by Merant was a bold step both to clear up its perception by potential customers and to get its engineers all reading on the same page, as it were. "When you think about Merant, you think of data connectivity, ECM and legacy transformation," Hill said. "There are touch points, but they didn't go together in a unique and compelling way. Micro Focus wasn't really even in the Egility framework."

Hill described the break as a clean one. Micro Focus got to keep all the products it had developed historically, as well as the APS COBOL code-generation product line from Intersolv and the EnterpriseLink tool acquired by Merant in 1999 for putting Web front ends on legacy applications. Micro Focus also retains the AssetMiner business rules extraction tool and the NetExpress tool for converting rules into Enterprise JavaBeans—two key elements in the legacy transformation pillar.

And in Hill, Micro Focus gets a leader who has spent a large portion of his professional life solving legacy transformation and integration problems. He began work at Intersolv in 1987 and became a vice president at Merant after the purchase. During our interview, Hill was enthusiastic and described a clear direction for Micro Focus.

Hill said the company is broadening its reach into Web services (who isn't?), but he was unable to put a time frame on XML and SOAP support in the Micro Focus product line. (Who can?) He did say that COBOL and Java will coexist in many shops that won't be able to afford the resources required to rewrite legacy applications in an object-oriented language. Hill sees Micro Focus as allowing customers to exploit the benefits of Java with proven investments in COBOL. "We can allow our customers to develop, maintain or enhance COBOL applications using 30 percent less resources," Hill claimed. "We have a tremendous focus on ROI. We can take costs out of the stuff you need to do."

Surely, there is a market for COBOL tools, for development of new applications as well as for tools that can help large organizations transform those applications into reusable application objects and Web services. Heck, there's a market for any tool that can save customers 30 percent off their current expenses. By Micro Focus' own estimates, there are something like 2 million COBOL applications still in use worldwide, many of which are monolithic and difficult to change, so the potential market is a large one indeed. The Micro Focus solution could very well help answer the question development managers have about what will happen to their legacy code when their COBOL programmers move on to that great mainframe in the sky.

As to the timing of a spinoff in this perilous economy, Hill said, "These are difficult times for all companies. But people still need to eat bread, they still need to eat pasta, and they still need to figure out cheaper ways to maintain COBOL."

Hey, that could be the new slogan for Micro Focus: "COBOL...You Can't Live With It, You Can't Live Without It!" ■

David Rubinstein is executive editor of SD Times.

Are Developers Planning to Target An Open-Source Operating System In the Next 12 Months?

EVANS DATA WATCH

There has been a dramatic upswing in interest in the use of open-source operating systems, such as Linux, for embedded applications.

Nearly half of 525 embedded developers recently surveyed by Evans Data Corp. indicated they will write at least one application for such a target platform within the next year.

This figure represents more than three times as much interest in open-source operating systems as last year, when a similar survey showed that 14 percent of developers were targeting such platforms for their applications.

Source: Embedded Systems Developer Survey, Volume I, 2001, Evans Data Corp.
www.evansdata.com

BUSINESS BRIEFS

Jacada Ltd., creator of the Jacada interface server, has completed the $6 million cash acquisition of **Propelis Software Inc.**, a provider of business process management and legacy integration software. Jacada now can extend its product line and help in the expansion of the capabilities of the interface server. Propelis formerly had been known as the Enterprise Integration Solution Division of CNT, a storage network provider . . . America Online Inc. has announced it will cut 500 jobs from **iPlanet**, the alliance between its Netscape subsidiary and Sun Microsystems Inc. The move will result in the elimination of 17 percent of iPlanet's work force, and is expected to net AOL a $125 million third-quarter charge against earnings . . . **CrossWeave Inc.**, which developed a platform for composing applications, has closed an $8.1 million second round of venture funding with **Norwest Venture Partners**, **Sutter Hill Ventures** and **Redpoint Ventures** . . . **Viador Inc.**, an enterprise information portal company, received $4 million in new funding; announced the return of one of the founders, Stan Wang, as president of the company; and reported second-quarter revenues of $2.7 million, down from $3.6 million during the first quarter. Net loss per share was 33 cents, an 8 percent improvement over the previous quarter. ■

CALENDAR OF EVENTS

JDJEdge Conference & Expo — Sept. 23–26
New York, SYS-CON MEDIA INC.
www.sys-con.com/jdjedge

XML One & Web Services One — Sept. 30–Oct. 4
San Jose, Calif.
101 COMMUNICATIONS LLC
www.xmlconference.com/sanjose

Communications Design Conference — Oct. 1–4
San Jose, Calif.
CMP MEDIA LLC
www.commdesignconference.com

Embedded Linux Expo & Conference — Oct. 9
Boston, RTC GROUP
www.rtcgroup.com/elinuxexpo/boston

Electronic Commerce World Conference & Exhibit — Oct. 9–12
Chicago
ELECTRONIC COMMERCE WORLD MAGAZINE
www.ecmediagroup.com/confer/ecwchi/index.cfm

VSLive — Oct. 9–14
Orlando, Fla.
FAWCETTE TECHNICAL PUBLICATIONS INC.
www.vslive.com

XMLEdge Conference & Expo — Oct. 22–25
Santa Clara, Calif.
SYS-CON MEDIA INC.
www.sys-con.com/xmledge

PalmSource — Oct. 23–26
San Jose, Calif., PALM INC.
www.palmsource.com

SIGS Conference for Java Development — Oct. 28–31
San Jose, Calif.
101 COMMUNICATIONS LLC
www.javadevcon.com

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